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VITAMIN C AND MENSTRUATION[1]

An experiment was carried out on 32 unmarried women of the industrial class, all of whom were suffering from menorrhagia, to demonstrate the relationship between vitamin C deficiency and nutritional anæmia due to menorrhagia. The women were pale, listless, thin, constipated, easily tired, with poor appetites and in constant dread of their monthly periods. After a test dose of 'Redoxon' sufficient to produce saturation, 20 of the 32 cases were restored to a clinically normal condition, 8 were improved, and 4 had no change. There was a diminution in the duration of the menstrual periods, an increase in the percentage hæmoglobin of the blood, and a disappearance of pain and symptoms associated with dysmenorrhœa. The improvement was greatest in the worst cases.

TREATMENT OF GINGIVITIS[2]

In a period of ten weeks 18 out of 505 new patients at the Dundee Dental Hospital were found to be suffering from gingivitis. Each patient was given 300 mg. of ascorbic acid ('Redoxon') daily until urine tests showed that saturation had been reached; no local dental treatment or antiseptic mouth washes were employed. Even after a single dose changes in the gum tissue were observed, the red and congested area had shrunk to half its original size and the pain had largely disappeared. The amount of ascorbic acid needed to saturate the patient varied from 900 to 4,200 mg., the average being 2,000 mg. In most cases bleeding ceased after four days' treatment and all patients felt much better in general health. When a normal condition of the gums had been restored, a maintenance dose of 100 mg. a day was given. The results suggest a vitamin C deficiency as an important factor in gingivitis.

PRE-MEDICATION FOR CHILDREN[3]

Opium derivatives are seldom administered to children, possibly because of a traditional prejudice against them, but recent investigations have shown that these drugs are well tolerated. A series of 600 children, aged from 1 month to 16 years, was given 'Omnopon' in appropriate dosage. Most of the children were drowsy and unapprehensive when brought into the anæsthetic room, induction was smooth, the amount of anæsthetic used was reduced, and post-operative consciousness was quickly regained with a minimum of restlessness. Scopolamine was given to inhibit secretion. Doses varied from 'Omnopon' gr. 1/30 with hyoscine gr. 1/1,200–gr. 1/900 to the full adult dose in the case of well-developed patients.

'OMNOPON' IN REGIONAL ANÆSTHESIA[4]

The authors point out that the advantages of regional anæsthesia in grave abdominal cases have long been recognised. They describe an improved method which has six main features including adequate pre-operative 'Omnopon' sedation. 'Omnopon' is used intravenously, if no sedative has been given before admission or if sedation is inadequate, because of its rapid action by this route and because the dose can be regulated to the patient's requirements. Should further 'Omnopon' sedation be necessary, the drawing up of gr. 1/3 'Omnopon' into the intravenous anæsthetic used is a safe and useful procedure which not only renders the patient unconscious during the insertion of the regional anæsthetic, but with a suitable dose will keep him asleep throughout even a long abdominal operation (if no unanæsthetised area is stimulated).

RIBOFLAVIN FOR CHILDREN[5]

The nutritional state of 499 rural Oxfordshire schoolchildren was determined in December 1939, before rationing was introduced, and again in April 1941, after more than a year of dietary restrictions. There was no sign of increasing nutritional deficiency and no deterioration in the state of nutrition as assessed by the same observer. Some degree of deficiency of the vitamin B_2 complex was present throughout the period of observation as indicated by the presence of 17 cases of angular stomatitis (cheilosis) among 1,568 children between the ages of 6 and 14. Pure Lactoflavin 'Roche' (Riboflavin) was successfully used to treat 2 cases.

REFERENCES

1. *Ulster Medical Journal*, Oct. 1940, p. 117.
2. *British Medical Journal*, March 8, 1941, p. 360.
3. *The Lancet*, Feb. 8, 1941, p. 171.
4. *British Medical Journal*, Dec. 27, 1941, p. 906.
5. *The Lancet*, Oct. 4, 1941, p. 405.

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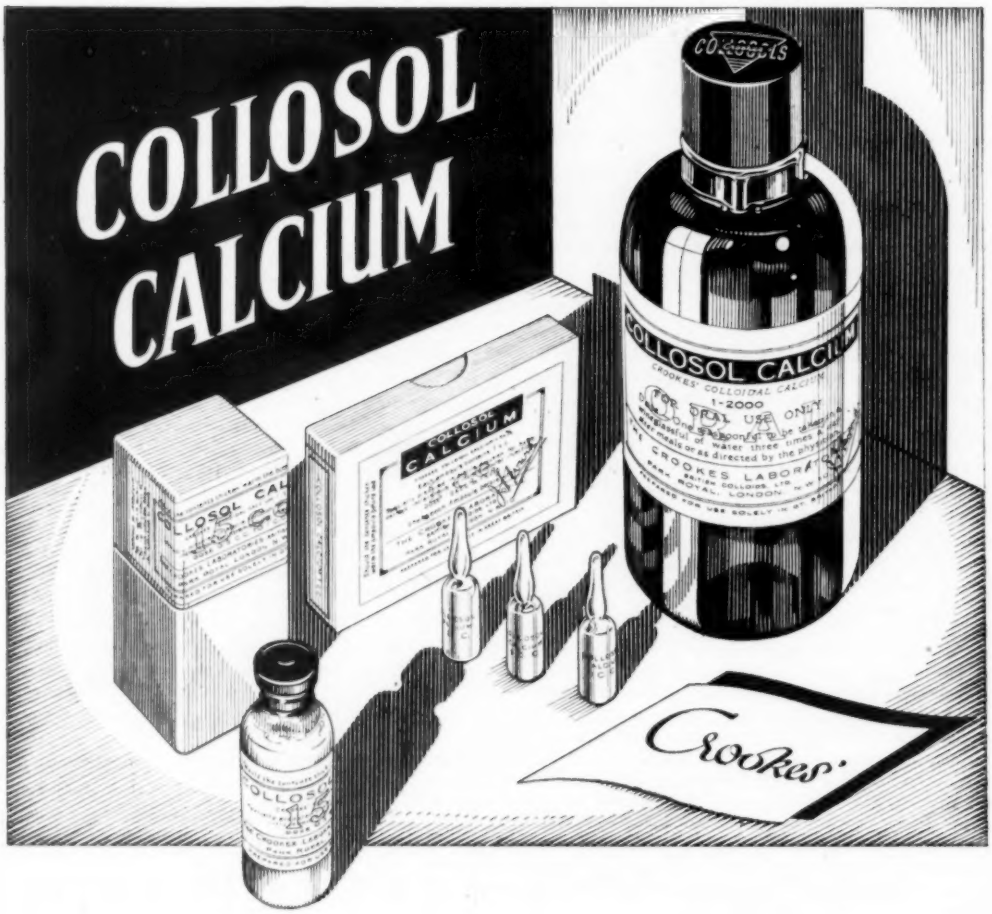

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ORIGINAL ARTICLES

CONTINUOUS METHOD OF DRYING PLASMA AND SERUM

JOHN F. WILKINSON,
M.D. MANC., PH.D., F.R.C.P., F.I.C.
PHYSICIAN IN CHARGE AND DIRECTOR OF THE DEPARTMENT OF CLINICAL INVESTIGATIONS AND RESEARCH, ROYAL INFIRMARY AND UNIVERSITY OF MANCHESTER; REGIONAL TRANSFUSION OFFICER E.M.S.

KENNETH BULLOCK,
PH.D. MANC., F.I.C., PH.C.
LECTURER IN PHARMACY, UNIVERSITY OF MANCHESTER

WILLIAM COWEN,
M.SC. MANC., A.M.I.CHEM.E.
SENIOR LECTURER IN CHEMICAL ENGINEERING, MANCHESTER COLLEGE OF TECHNOLOGY

IN an earlier communication Aylward and others[1] considered the question of concentration and drying of plasma and the advantages of the desiccated preparations so obtained, especially their stability, economy in storage, ease of transport, and use in the preparation of concentrated plasma. Plasma and serum can be quite readily desiccated in small quantities by several methods, but on the larger scale many difficulties arise; the serum or plasma proteins are easily denatured, and sterility is not easy to maintain on larger apparatus, which is also very expensive to install and run. This paper indicates how these difficulties can be overcome and describes an economical, continuous process of spray-drying which can be adapted to large-scale use.

In 1872 Samuel R. Percy of New York City patented a "method of atomising and desiccating fluid and solid substances, also viscous substances containing water, by the use of dried, heated or cooled air or gas which forces the substance into atoms; the atoms being thrown forward and forced into a chamber and dried in consequence of the dried and heated air which propels them into the chamber and also owing to the dried and heated state of the chamber into which they are thrown." (U.S. Patent No. 125406.)

Owing to the very rapid desiccation resulting and the fact that substances are much more stable to heat in the desiccated condition, spray-drying has been found suitable for the drying of heat-sensitive materials; thus, it has a wide commercial application in the production of dried milk. Two of us (J. F. W. and K. B.) have already demonstrated the increased stability of the heat-labile preparations of stomach containing the sensitive enzyme, hæmopoietin, after desiccation, while as far back as 1932 we also examined samples of spray-dried whole blood.

Probably the first mention of spray-drying of blood is in Stauf's patent (U.S. Patent No. 666711, dated 1901) which claims "a process of obtaining the solid constituents of liquids such as blood, milk, and the like in the form of powder, the said process consisting in converting the liquid into a fine spray, bringing such spray or atomised liquid into a regulated current of heated air so that the liquid constituents are completely vaporised, conveying the dry powder into a suitable collecting space away from the air current and discharging the air and vapour separately from the dry powder." Many variations have been tried by altering the shapes and sizes of drying chamber and collecting apparatus, spraying from the bottom with an upward current of air, or from the top with a downward current of air, and using either stationary or centrifugal rotary atomisers.

When we first investigated the possibility of spray-drying of human plasma or serum to be used for transfusion into patients, the only plant available was so large that ten to twenty *gallons* of plasma were needed for even preliminary experiments and it was clear that it would be very difficult to obtain a sterile product with such a plant. A milk-drying apparatus was described by Waite[2] with which he reported the drying of some blood plasma (? animal), but his apparatus was not suitable for preparing sterile products. We were therefore obliged to design an apparatus to meet the special difficulties of the problem and we have now produced a much improved apparatus based on this spray-drying principle that is capable of dealing under sterile conditions with such quantities of plasma or serum as are available; these are relatively small compared with such a product as milk. To increase the scale of working, if desirable, would be simple.

Plant for Spray-drying Plasma or Serum

The principle of our plant is that the plasma or serum is passed through a suitable atomiser into a stream of sterile warm air, the water being evaporated from the surfaces of the droplets. The main advantages of this process are (*a*) the rapid evaporation obtained on account of the very large superficial area exposed at the surfaces of the droplets; and (*b*) the temperature of the material does not rise above the wet-bulb temperatures of the drying air until drying is almost complete, so that drying may be done quickly at temperatures much lower than those required in other processes carried out at normal pressure, and the danger of impairing the product by over-heating is avoided.

The apparatus, all of which can be sterilised before, and kept sterile during use, consists essentially of a large drying chamber into which the plasma or serum is blown in a very fine umbrella spray from an atomising jet in the top of the chamber, into a current of warm sterile air circulating within the chamber. The dried plasma or serum collects at the bottom of the chamber, and also in a second smaller chamber or cyclone, the moisture being carried away in the outgoing air stream.

The *drying chamber* (A in fig. 1) is made of 18 gauge Firth's F.D.P. 'Staybrite' steel welded and polished on the inside surfaces so that there are no cracks or niches; it is 6 ft. high by 2 ft. in diameter and carries a truncated head and conical base both made of similar staybrite steel. The head is closed either by a heat-resisting glass or staybrite cover (B). All these detachable parts are made so that they can easily be dismantled for cleaning. The cover has a hole drilled through the centre, through which the atomising jet (fig. 2) is inserted and fixed before sterilisation. The stream of sterile air enters the chamber tangentially so that it takes a spiral course in the chamber round the periphery like a whirlwind, the air in the centre being relatively undisturbed.

Sterile dry air is blown into the drying chamber as follows (fig. 1). A fan (C), capable of moving 250 c. ft. of air per min. against a resistance equivalent to 19 in. (water gauge), is used for drawing the air through a thick felt syrup-strainer, covered with two layers of cotton-wool and cotton cloth arranged alternately (D), and delivering it past a control valve, a standard 1 in. nozzle for measuring the air flow (E) and through the heater (F), into the chamber. We have also used an oil filter as a precleanser of the air before its passage through the textile filter. The oil filter is unnecessary from a bacteriological point of view, but on particularly foggy days it protects the cloth filter from excessive dirt in the atmosphere. The heater (F) is a staybrite steel box containing ten 1000-watt 'Creda' electric fire-bars each approximately 12 in. long, fitted in parallel in two sets of five on each diagonal plane of the heating chamber in the direction of motion of the drying air; they present a large clean heating surface over which the air must pass to be heated and sterilised before entering the drying chamber. External resistances are coupled in series with the supply to these elements and it is possible to maintain the air stream at any temperature up to 250° C.

Jet for atomising the plasma or serum (fig. 2).—A simple internal-type compressed-air atomiser (G in fig. 1) has been designed to work in conjunction with any one of four stainless steel jets (0·25 to 1 mm. diameter supplied by Messrs. Accles and Pollock, Ltd., Birmingham). Fig. 2 shows the design of the atomiser finally used. The atomiser is fixed into the detachable cover of either staybrite steel or heat-resisting glass, the latter having the great advantage of allowing visual observation of the behaviour of the spray, thus leading to better control. It was observed that liquids could be sprayed easily through the atomiser by using compressed air at any pressure greater than approximately 18 in. (water gauge) if the head of liquid was at least 2 in. (water gauge) greater than that of the air being used in the atomiser. This fact was utilised in designing the system adopted for feeding the liquid to be sprayed into the dryer (fig. 1).

Feeder apparatus.—The stream of nitrogen or air used in conjunction with the atomising jet is applied from either a

1. Aylward, F. X., Mainwaring, B. R. S. and Wilkinson, J. F. *Brit. med. J.* 1940, ii, 583.
2. Waite, R. *Chem. and Ind.* 1940, **59**, 659.

cylinder of compressed nitrogen or a motor blower (H) which draws the air through a felt filter bag (I) and passes it through a glass wool filter (J) into a large pressure-equalisation vessel (K). This air stream passes slowly over the surface of a 750-watt heating element enclosed in an insulated steel container (L) where the temperature is raised to about 400° C. The stream of sterilised air flows through the cooler (M) and is divided so that part goes to the supply bottle (N) to put the plasma or serum under pressure and displace the amount fed to the atomiser; the remainder of the sterilised compressed air is directed to the atomiser. The liquid displaced from the bottle (N) by compressed air flows through a drip-tube (P) to the atomiser and is sprayed into the drying chamber, the rate of flow being controlled by a valve.

The sterile plasma or serum to be dried can be supplied to the feed bottle (N) by the following two different methods. (1) Winchester bottles (Q) containing the sterile, filtered liquids are connected as required to the inlet tube of the feed bottle (N) and their contents blown into the feed bottle by air under suitable pressure from gas cylinder (R). (2) The plasma or serum is stored in a large tinned copper reservoir and then blown through a Seitz filter directly into the sterile reservoir (N); this can be done as convenient.

Cyclone separator (fig. 1).—Although some of the dried plasma or serum collects at the bottom of the drying chamber, owing to its fineness and lightness a large proportion is carried out by the air stream. The air stream is, therefore, passed through a small cyclone separator (S) for further removal of the powder. The cyclone separator is also made from 18 gauge staybrite steel and has proved to be very efficient, most of the dried powder being collected at the base of the cyclone rather than at the base of the drying cylinder. There is no loss of dried powder in the air stream passing through the textile filter (T) attached to the exit pipe of the cyclone.

COLLECTION OF DRIED PLASMA OR SERUM

Fig. 3 shows the method of collecting the dried powders under sterile conditions at the bases of the drying chamber and the cyclone thus enabling the plant to be run continuously.

To each base is fitted a closed wooden box having a glass front and a hole at each side closed with a dust-proof "glove," by means of which manipulations can be carried on inside without opening the box. Inside the box also are two 40-watt lamps to warm the receiving bottles slightly above the dew point, so avoiding condensation of moisture in them. In these two boxes special carefully machined attachments, designed on the principle of the microscope double objective nosepiece, are fixed to the lower outlets in the bases of the drying chamber and cyclone respectively. Each is composed of two rigid flat circular plates connected at the centres on the pivot; the top plate has one eccentric hole for connexion to the appropriate base. The bottom plate has two slightly larger diametrically opposed holes drilled on the same pitch circle as that in the upper plate. Screw caps (to fit the receiving bottles) are fixed concentrically with each hole in the bottom plates and drilled with the same size of hole as that in this plate. The flat surfaces of the two plates in contact are carefully machined to make an air-tight joint. A bottle can be screwed into each cap and by turning the bottom plate about its pivot each bottle may be connected in turn to the plant for collecting dried powder, while a full bottle may be removed and replaced by a fresh one under sterile conditions without interfering with the continuity of the drying process.

ROUTINE EMPLOYED

The top plate of the drying chamber carrying the atomiser, both the swivel nosepieces, all rubber and glass tube connexions, and the drip tube are sterilised separately in parchment paper in the autoclave for half an hour at 10 lb. per sq. in.; the ends of the rubber tubes and nozzles are temporarily plugged with wool into small test-tubes. The collecting bottles, plugged with wool and covered with parchment are sterilised in the air oven for an hour at 150° C. The screw caps for these are sterilised separately in the same way.

The plant is started as follows. The heaters are regulated so that air at 230° C. is blown into the drying chamber. The previously sterilised top of the drying chamber is put into position and the exits of the cyclone closed. When air has been blown through the drying chamber for an hour with an exit air temperature of 150° C., the swivel nosepiece in the closed position is attached to the base of the chamber and the hot air blown into the cyclone and out at the lower exit in its base for a further hour at 150° C. Finally, the previously sterilised textile bag and the second swivel nosepiece are attached to the cyclone and hot air (exit temperature 150° C.) is blown through the whole machine for a further hour. In this way the entire apparatus is completely sterilised inside. The temperature of the ingoing air is then reduced to 70–80° C. and the plant allowed to cool down and reach equilibrium for a further half hour, when the receiving bottles are attached to the nosepiece under the hoods and all tubes are fitted, with preliminary flaming and all suitable precautions to preserve sterility. The receiving bottles are turned under the drying chamber and cyclone respectively and the spray is started, the temperature of air entering the drying chamber being maintained at 70–80° C. The plasma or serum is run in at such a rate that the drops can just be counted in the drip tube. As they are filled the receiver bottles are changed by swivelling the nosepieces and taking the usual precautions under the box hoods during the removal of the full bottles and replacement by sterile empty ones.

When the process is to be discontinued, the bottles are swivelled to the neutral positions, after stopping the spray and gently tapping the outside of the drying chamber and cyclone to shake down any powder sticking to the sides of the conical bases. Then the heaters are switched off and allowed to cool before stopping the air flow. The apparatus can then be opened, washed out with cold water and cleaned. The usual precautions are taken to prevent undue contamination or disturbances of the air in the room where the apparatus is being used, the floor being treated with oil, and other precautions taken to reduce the risk of contamination, as used in the plasma-filtration room.

In using an apparatus of this type for the spray-drying of solutions, there are obviously many variable factors to be considered; the nature of the resulting product depends on the proper adjustment of these. The main factors concerned are—

(a) *The nature of solution* to be sprayed, its total solid content, and the characters of the solute. Serum, plasma or plasma-saline containing some 4–10% of total solids does not require precondensation as might be necessary with more dilute solutions.

(b) *Jets and atomiser.*—Shape, size, number, adjustment, position in chamber, pressure of air and liquid in the atomiser, the nature of the atomised spray as to fineness, dispersion, &c.

(c) *Air current.*—Temperature, speed, volume, initial dryness, its direction of movement in the drying chamber. Also the type, size and resistance to air flow of the air filter.

(d) *Heater.*—Temperature of air entering drying chamber.

(e) *Drying chamber.*—Size, temperature, point of air entry and exit, the latter influencing the relative proportions of powder collecting in the receivers of the chamber and cyclone respectively.

(f) *Cyclone.*—Internal construction.

(g) *Textile bag filter.*

(h) *Maintenance of sterility.*

The speed of drying depends also on these factors and the size of the plant; we can dry successfully in this size of apparatus at the rate of 1½–2 litres per hour, and the yield on a continuous run is practically quantitative. We find that a little of the desiccated product may adhere lightly to the internal polished wall of the drying chamber, and a proportion falls to the bottom and collects in the conical base whence it drops into the receiving bottle. The majority, however, of the fine powder is collected in the receiver under the cyclone. If the textile bag is sufficiently fine there is no loss of powder at all from the apparatus. The optimal working conditions described have been arrived at after many experiments, in which all these factors were varied.

Results

In all our experiments we have borne in mind the absolute necessity for (1) producing an undenatured desiccated preparation which will re-dissolve in water to yield a solution identical with the original starting material, and (2) maintaining sterility of the starting material, the inside of the apparatus and the final product.

Preservation of heat-labile characters.—Using this apparatus we spray-dried fresh cow's milk without any demonstrable loss of its peroxidase reaction or solubility in water. It was equally easy to desiccate solutions of

pepsin so that the resulting powder re-dissolved readily without diminution in digestive power. Thus, an aqueous solution containing 10 g. of scale pepsin and 90 g. of lactose per litre yielded a fine dry powder of which 1 g. (containing 0·1 g. of pepsin), when assayed by the standard U.S.P. egg-white digestion method, showed the same activity within experimental limits as 0·1 g. of the original scale pepsin when examined at the same time under the same conditions. Muscle extracts have also been spray-dried without loss in activity of the sensitive glycolytic enzyme system.

The desiccation of human plasma-saline, plasma and serum, and of guineapig serum was carried out in the same manner without difficulty and without the necessity for any preliminary treatment such as precondensation.

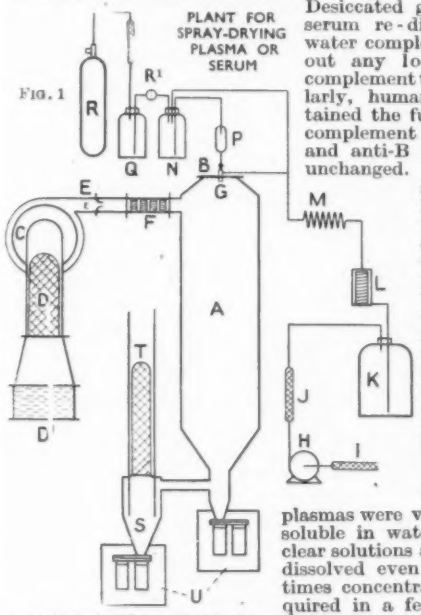


FIG. 1

A, drying chamber. B, glass or steel cover. C, fan. D, textile air-filter. D¹, oil filter. E, nozzle for measuring air-flow. F, heater. G, atomiser. H, motor blower. I, felt filter bag. J, glass-wool filter. K, pressure-equalisation vessel. L, heater. M, cooler. N, supply bottle. P, drip-tube. Q, Winchester, containing sterile filtered liquid to be dried. R, gas cylinder. R¹, sintered glass filter. S, cyclone separator. T, textile filter. U, receivers in glass-fronted boxes.

Desiccated guineapig serum re-dissolved in water completely without any loss of its complement titre. Similarly, human sera retained the full titres of complement and anti-A and anti-B agglutinins unchanged. Grouping sera of high titre were separately dried on this plant yielding undenatured fine powders which retained their anti-A and anti-B agglutinins unimpaired. All these sera and plasmas were very readily soluble in water yielding clear solutions and readily dissolved even to a five-times concentration if required in a few minutes. The sodium nitroprusside test for denaturation was completely negative.

Sterility.—The preparation of a sterile product depends on scrupulous care in sterilising the apparatus at the beginning and in collecting the dried product. Once the machine is running no contamination can occur inside until the run is stopped; this continuity of the process is of much importance. We have repeatedly tested all parts of the apparatus and at different stages of running for sterility and are satisfied that no source of contamination is present. The desiccated products were found to be sterile using the tests for sterility recommended by the Blood Transfusion Research Committee of the Medical Research Council. In addition, sample bottles of dried plasma or serum have been reconstituted by the addition of sterile water and incubated for 7–14 days at room temperature and at 37° C. without evidence of the presence of organisms.

Physical properties.—Spray-dried serum, plasma and plasma-saline form fine, light, fawn-coloured powders, very readily soluble in cold water, yielding perfectly clear solutions. These powders, when examined under the microscope, have a hollow shell appearance; indeed this appearance is a test for the correct operation of the spray during drying.

The moisture content of dried plasma has been stated to be an important factor in its keeping properties. A sample of spray-dried whole plasma exposed to the atmosphere of the laboratory came to equilibrium when it contained 10–11% of moisture. This then may be taken to be the moisture content of the air-dried powder. Of the spray-dried whole plasma or serum, samples collected below the drying chamber and cyclone had moisture contents varying between 3·7% and 10·64%, depending rather on the rate of spraying and the adjustment and the degree of fineness of the spray than on minor changes in temperature or the volume of drying air used. Thus, raising the temperature of the drying air from 77° to 100·5° C. resulted in a drop in the moisture content of only 1·42%. In other experiments approximately doubling the rate of the air flow caused a drop in moisture content of the same order.

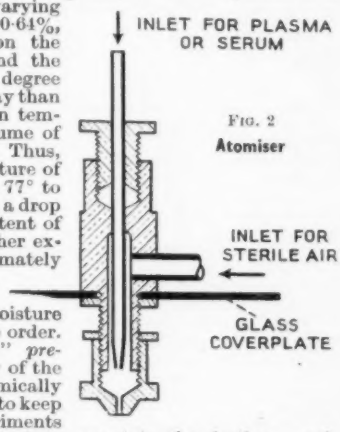


FIG. 2
Atomiser

"Chemically dry" preparations.—In view of the fact that a "chemically dry" powder is said to keep indefinitely, experiments have been carried out to ascertain the further possibilities of complete desiccation of the spray-dried powder. Dried whole plasma containing 10·45% moisture, after exposure in a thin layer over phosphorous pentoxide in vacuo for 48 hours contained only 0·01%. Spray-dried whole plasma in bottles approximately 3 in. in diameter and 5 in. in height, about three-quarters filled, when exposed in vacuo over phosphorous pentoxide showed a fall in the moisture content to 0·7% in five days, while in fourteen days it was practically nil. These figures illustrate that complete desiccation of spray-dried powders can be obtained by evacuation over P_2O_5. The dry powders obtained from plasma-saline, whole plasma and serum have been found to be easily and completely soluble in water without cloudiness of the reconstituted liquids.

Reconstitution.—Solution of powder in sterile water takes place in a few minutes if done correctly. It is convenient for ordinary use to put the requisite amount of desiccated serum or plasma into a dry sterile M.R.C. blood bottle with or without a few grammes of glass beads. The bottle is sealed and evacuated by means of a needle through the stopper, which is then withdrawn. This procedure removes any air from the microscopic shell-like structure of the powder and thus permits complete solution in water within 1–2 min. when sterile water is allowed to run into the bottle and shaken. Rapid solution can be obtained even when a five-times concentrated serum or plasma is required.

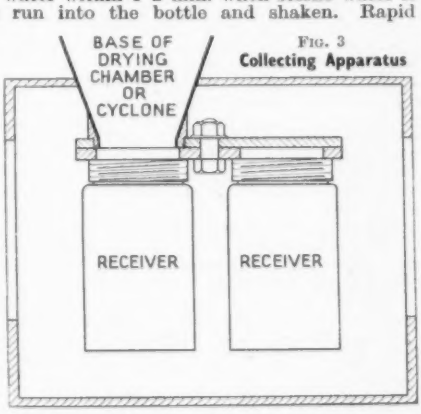


FIG. 3
Collecting Apparatus

Clinical tests have been carried out using reconstituted desiccated (spray-dried) plasma, plasma-saline and serum. It is intended to present fuller details later. We can note here that the reconstituted solutions in sterile water in normal concentration behaved exactly as did the original fluids when tested clinically. We have also employed reconstituted plasma and serum in concentrations up to five times with satisfactory results. These concentrated

solutions have offered no difficulty in preparation as indicated earlier. Grouping sera can be dried equally well by this method and retain their anti-A and anti-B agglutinins, giving a most useful method of storing such sera for long periods without deterioration.

Summary

A new apparatus is described for the continuous spray-drying of plasma, serum or plasma-saline under sterile conditions. The apparatus is economical, inexpensive to build and can be worked continuously.

Using this apparatus, human plasma, plasma-saline and serum have been dried on a semi-technical scale without loss, impairment or denaturation so far as can be detected.

The products are sterile, fine, dry powders containing 3–10% moisture and are readily soluble in water yielding clear solutions.

These products can be completely desiccated to "chemically dried" powders over phosphorus pentoxide in vacuo.

Human and guineapig sera when spray-dried retained their complement titres unchanged.

Human sera similarly did not show a lowering of their anti-A and anti-B agglutinin titres.

They can be reconstituted into clear solutions, indistinguishable from the original plasma, plasma-saline or serum.

Clinical results using these reconstituted liquids appear to be identical with those obtained with the original undried plasma, plasma-saline or serum.

The desiccated plasma or serum will dissolve readily to as much as a five-times concentrated solution, which has also given good clinical results.

Human sera of high titres for blood-grouping were also dried successfully without loss of titre.

We wish to thank the University of Manchester for a generous grant and facilities for the erection of our second plant; Prof. James Kenner, F.R.S., of the College of Technology, for facilities to erect the first plant; Dr. Fred Stratton and Mr. J. Cannell of the Regional Transfusion Laboratories; Dr. J. C. Brundret of the Public Health Laboratories, who has made independent bacteriological examinations of our plant and technique; and other members of our staffs and students who have spent long hours in maintaining continuous running of the plants.

Mr. F. A. Whittle and William Birch (Engineers) Ltd., Milton Street, Lower Broughton, Salford, were responsible for the manufacture of the two plants from our designs.

MENTAL REACTIONS TO AIR-RAIDS

HENRY WILSON, M.D. CAMB., M.R.C.P., D.P.M.
PSYCHOTHERAPIST, NEUROLOGICAL DEPARTMENT, LONDON HOSPITAL

THE small number of psychiatric casualties that have followed aerial bombardment has been a matter of surprise. Why are these cases so much fewer than was expected? This paper presents some particulars which may help in part to answer this question, but one observer alone, or even several observers in any one district, can have no more than a small view of the problem. A complete summary would include the study of: psychiatric casualties in the forces (see Curran and Mallinson 1940, 1941); psychiatric casualties at first-aid posts and casualty hospitals; reactions in shelters; reactions in evacuation areas, where some of the stresses between billeter and billettee are probably due to anxiety about those left behind, or shame that the billettee has not been able to face the music; psychosomatic reactions.

Considerable fear reactions have been witnessed in some shelters but have always been controlled by wardens, doctors and first-aid workers whose presence has certainly been important. Reactions in evacuation areas have not been much recorded, though stupor has been described in people from heavily bombed areas (Harrisson 1941). Psychosomatic reactions are well recognised, but, as recorded below, it is surprising that they are not seen in persons who have come to first-aid posts in acute emotional states.

Of 697 civilian patients brought to the first-aid post to which I am attached, 134 were suffering from the results of fright and anxiety and were dealt with by methods similar to those described by Mira (1939), Sargant and Slater (1940), Brown (1941). In the rush of work no adequate notes or follow-up of these cases, which ranged from acute emotional disturbance to hysterical paraplegia and stupor, were possible but all left hospital within twenty-four hours and only 6 returned. Their names and addresses were known and further attendances in any department of the hospital could be traced. This has been done, and it is remarkable that only another 4 attended any department of the hospital at times up to nine months succeeding the acute fear reaction, and none of these for what could possibly be regarded as hysterical conversion symptoms. Thus most of the cases have apparently returned to normal, though some may have been evacuated. They were all told that their reaction was due to fear, that that fear was one they shared with all other patients and with the first-aid workers, and that it was important that they should return to their normal work and resist the temptation to exaggerate the experiences through which they had passed.

In order to answer our question a comparison has been made between 63 patients suffering from psychiatric symptoms due to aid-raid stress, seen in the neurological department of an EMS hospital, and 102 patients (86 men and 16 women), taken at random as controls from the surgical outpatient department of the hospital, where no question of hysterical conversion symptom was present. (No service cases are included.)

CONTROL CASES

Of the 102 control cases, 2 had had frank psychopathic illnesses within the last four years, and one a psychotic episode since September, 1940, from which there had been apparently complete recovery. They were typical east enders ranging from 18 to 69 in age (only 4 were over 60), some were clerks, but most of them were labourers, artisans, shop assistants and housewives, only 5 were in civilian defence. The method of investigation was as follows:

Information relating to previous history, injuries, work record, "attacks," use of leisure, and social adaptability were obtained, and the family-history was reviewed. The province of the sexual life was deliberately avoided, because it is always difficult to assess, may colour future replies and could not be entered into fruitfully in any rapid and practical review of military recruits or civilian conscription. Finally, after inquiry about previous war service comes the question: "How do the air-raids affect you?" This was the last question addressed to them. They had previously been told they were one of a group of normal persons who were being compared with a group of abnormal patients, and they were all coöperative and forthcoming with the exception of one cantankerous and suspicious man.

Among the 102 controls 70 showed a normal response though 22 of these admitted occasional nervous upsets in years before the war; 11 were more disturbed than was regarded as normal (group 1); 10 only grudgingly admitted it (group 2); and 11 denied any disturbance (group 3).

It is difficult to define "normal response," since people vary in their sensitivity. Perhaps the most striking example of normality was this answer: "Anyone saying he's not nervous is a liar. Kid other people; never kid yourself." It would appear that those over 60 share with normal adolescents the distinction of being least moved, the former perhaps because of developed stoicism. The latter's indifference may be related to their "non-attachment"; certainly there is a difference between the unattached adolescent and the recently married adult.

Loosely described, normal response admits some fear accompanied by somatic reactions such as trembling, sweating, mild palpitations and looseness of the sphincters. Where any of these become excessive the response was classed as abnormal (group 1). Two other groups are classed as abnormal: group 2, where fear is not admitted at once, but only expressed reluctantly; group 3, where fear is denied and specious arguments are produced in support of this denial.

Of those classed as normal responses the following are examples: I tremble a bit; anticipation not too good; I get a bit excited and pass a lot of water; bit jumpy to begin with; I'm not brave but I don't like to frighten others; I do get worried but not excessively;

no real bother, I can't stop them; not much but you get the wind up when they're whizzing down; bombed out of three houses so it's not too good now—sirens rather upset me.

Of the abnormal responses there are several varieties. A lorry driver of 35 says "They don't affect me in any way." He admits he's shaky yet denies this is nervousness though his wife "is nervy and shaky; this *is* nervousness because she shakes after the bomb has fallen and I don't." Some of the denials seem equally irrational, and also are rather obviously determined by the impression that fear, anxiety or panic must be denied: "Not at all, I've a tin hat and all that"; "certainly I'm not worried, not in any way—as a matter of fact I've volunteered." Similar reactions often occur in those with shelter-phobia—"Of course not, I stay out all the time"—but their real reason is that house or shelter at times of aerial bombardment produce acute claustrophobia.

If it is granted that the division into normal and group 1, 2 and 3 is valid it is worth mentioning that no connexion is to be found showing that the poor mixers or those with poor family histories belong to any one group. On the other hand if together with those showing a poor work record we include those unwilling to contemplate being foremen or accepting responsibility we have 18 cases, and 14 of these showed an unreasonable reaction to danger, though more than half denied that they did. Non-recognition or absence of fear may accompany constitutional or environmental inferiority; or the explanation may be that the inferior individual has to look with a blind eye at his danger. The old bedwetters and persistent nail-biters showed no specific reaction. The control group contained as many as 23 persons with compulsive traits, though none of these was serious. More than half of these people behaved (by their own account) in a well-adjusted way in situations of danger. The most surprising feature among the controls was the number who suffered from mild phobias, usually with symptoms in cinemas or tubes; these they avoided, and hence carried on quite happily. At first sight no serious cases of phobias were encountered, but when questioned about their reactions to air-raids, a different picture was revealed; 15 had shelter-phobia. This was not a distaste for shelter conditions but showed itself as a sense of constriction in the chest, often accompanied by sweating or palpitations. It occurred in big shelters as often as in Anderson shelters. Here are some typical examples:—

CASE 1.—Engineer, aged 24. "At first shelters turned my nerves up, since then I go in them and don't get scared." Doesn't like shelters even though his house has been hit. Every bomb seems to be coming for the shelter; "you feel safer if you go out and help."

CASE 2.—Stoker, aged 41. Never liked cinemas or music halls. "I don't go down no shelters" (emphatically); "I like fresh air" (despite his occupation).

CASE 3.—Labourer, aged 40. Never liked travelling or cinemas. "I get a bit scared at times, I stand out there all the time in the alley. I seem to have more confidence. I'd hate sheltering, I'm choked."

CASE 4.—Engineer, aged 32. Some years ago claustrophobia, never since. "Folks are amazed at my fatalism." And then the reason comes out: "I won't go into a shelter—it's claustrophobia."

CASE 5.—Liftman, aged 52. "I like to go out and see them"—because he has fears of shelters, though not of lifts.

Shelter-phobia is mild where there has been no previous phobia. My impression, from cases like 2, 3 and 5, is that some of the apparent bravery is phobia-determined; where there have been previous phobias of closed spaces complacency even in large shelters is uncommon.

CASE 6.—A shelter warden who has stood up well to strain considering his psychopathic heredity developed a recent anxiety about more and more safety exits in his large shelter. This may indicate that his own adjustment is weakening, and in his criticism of the owners on this question of exits one can see how personal anxiety, too heavily strained, may lead to a paranoid reaction about the alleged negligence of the authorities.

AIR-RAID REACTION CASES

Of the 49 men and 14 women in my series of 63 reactions to raids, 38 had been involved in incidents but only 10 had been injured, and only 1 of these seriously. The homes of several had been wrecked (as had occurred with the controls). Several had had periods of overwork, but by no means always just prior to the onset of symptoms. Two men of the best mental calibre had certainly overworked and had reacted in the one case by a confusional state, in the other by a depression. A rough estimate suggests that before the onset of symptoms at least 90% would have been graded in category 1 by a medical board unacquainted with their personality history; whereas a personality history alone would have caused 48% to be graded low. When these patients were asked "How do the air-raids affect you?" only 3 gave an answer which suggested a reasonable acceptance of danger; 15 showed an excessive reaction; 18 grudgingly admitted anxiety; 27 persisted in denying it. For purposes of comparison a group of 52 established psychopaths known before September, 1940, and seen after that date are compared with the control cases and the air-raid reaction group in table I.

TABLE I—COMPARISON OF ALLEGED REACTIONS IN THREE CLASSES OF PATIENT

Type of response	Controls % (102 cases)		Air-raid reactions % (63 cases)		Previous psychopaths % (52 cases)	
Normal	68		4		13	
Excessive reaction ..	11		24		23	
Fear grudgingly admitted	10	21	29	72	27	64
Fear denied	11		43		37	

There was thus no appreciable percentage difference between the grouping in those suffering from air-raid reactions and in established psychopaths; but there was an outstanding difference between these and the controls, of whom 68% accepted the effects of acute dangers in a reasonable way, whereas an almost equal number of the others gave answers suggesting a suppression of their feelings.

COMPARISON OF PSYCHOPATHIC TRAITS

The difference between the control group and the psychiatric cases may be made clearer by a comparison of psychopathic traits. Assessment of these on a point system was tried, but was not easy. No *qualitative* difference in, say, the bad work records or the family histories is possible, but the following list (table II) shows that on the whole the comparison tells against the cases of air-raid reaction and favours the controls.

TABLE II

—	Air-raid reactions	Controls
Past war experience	6	3
Gives up work easily	6	3
Constant changes in occupation ..	13	4
Specially bad work record	1	1
Recurrent vague ailments	9	3
Antisocial behaviour at times ..	5	1
Admits being highly strung	24	31
Poor family history (psychopathy, separated families, &c.)	21	18
Poor social mixers	35	19
Highbrow, exclusive, hobbies ..	7	0
Total "bad" marks	127	85
Total cases	63	102
Psychopathic traits per person ..	2	0·8

This represents a ratio of 5:2 in the incidence of psychopathic pointers in the patients with air-raid reactions, quite apart from the quality of their deviations.

SOCIAL HISTORY AND PROBLEMS OF THE AIR-RAID GROUP

Returning to the psychiatric cases, rather more than a third of all the cases, and rather less than half the men (23 cases) were civilian defence workers. These were exposed to greater dangers than the others in this series but their personality histories were particularly poor, and it is doubtful if they were at all appropriate for the work, or if their training increased their ability to stand up to

danger well; 8 had poor work records, were unable to remain in jobs long, or were carrying on unproductive one-man businesses, often in debt and difficulties.

CASE 7.—A carpenter aged 30, who had had constant changes of job. His father was a compensation case of many years' standing, always in debt. His mother had chronic neurosis; his only brother was an obvious evader; his only sister had died in circumstances suggesting mental illness three years before.

One regular fireman is included among the 63 but he had had a depressive illness a year before. Not a single regular policeman is included, and Dr. R. D. Summers, divisional police surgeon for the district, tells me that he has only encountered one case in a regular policeman among the 900 under his care. The temptation to escape from irregular work or unsuccessful hawking into the regular war-time employment of civilian defence must be strong, particularly when it was considered less dangerous than military service. Several accounted for their volunteering for civilian defence by describing the enthusiasm of their wives for the project. One (perhaps a little off his guard) said "I didn't know my trade was reserved over 30; that made me go into the A.F.S." Only one had been a labourer, which seems as uncommon an occupation among those who break down as that of the regular fireman or regular policeman.

Since only those air-raid reaction cases have been included about whom sufficient notes were available the series as a whole were of a more chronic type than the acute emotional reactions seen in the first-aid post. The cases of the 23 civilian defence workers were complicated by indecision about their responsibility. They had not seen clearly where their duty lay, or were still playing with ideas—dimly conscious—of situations where danger might be less. A few belonged to the type (perhaps rather more common just east of Aldgate Pump), who find in any situation a chance for compulsory escape, and one gathered that a certificate urging immediate evacuation would have been welcome to some of these. To a few, compensation for minor injuries had already been paid and their recovery seemed as hopeless as that of the peace-time unsettled compensation case. One young woman with abrasions of the hand had succeeded in obtaining compensation pay within ten days—surely a record for any Ministry of Pensions. She developed hysterical cephalgia and pain in the arm when the condition of the hand returned to normal. A more serious problem was presented by the following patient:

CASE 8.—A storekeeper, aged 28. He was a nail-biter, asthenic but otherwise normal. With his present firm 6 years; 5 years ago had an accident. No lump sum settlement but had received 49*s.*, plus 6*s.* 3*d.* compensation weekly and light work ever since. "They've tried to put hard work on me but ——" (a famous surgeon) "said I was never fit for it. The manager tries to put it across me." The patient was in an Anderson shelter in October, 1940, when a bomb fell fairly near. He was not injured but went at once to rejoin his evacuated wife. On the evening of his projected return he developed severe pain in the right orbital ridge. The insurance company wrote to him: "It is observed that you are incapacitated from work by reason of nervous debility (bomb shock)"; and then followed all the most potent suggestions for a continuance of symptoms.

A man with this history and with this letter is unlikely to abandon his symptoms despite his total ignorance of their origin.

Equally vague histories of blast are often met with, and "blast shock" threatens to become an ætiological menace. In this series, 7 cases complained of it without any evidence of injury. Careful history will reveal that the alleged symptoms of the blast did not arise at once; in 3 at any rate they did not appear until the patient had taken a conveyance depositing him many miles from the incident. But where some injury did occur the train of events seems different.

CASE 9.—A quarryman, aged 42, who had always been reserved, and for years claustrophobic. When his father was dying of vesical retention he developed disabling penile pain. No sufficient explanation for this could be found physically or psychologically. Theories of identification with the father might have been indulged in but hardly with therapeutic relief. When he was fully conscious, more than two days after unproductive 'Evipan' investigation, he remembered vividly being hurled by blast from a bomb against a shelter in which he could not take refuge (because of his phobia) and he had penile pain associated with constant urges to micturate after this. As far as could be judged he was not concussed, but he had had complete amnesia. With the recovery from the amnesia his symptoms of pain disappeared though many longstanding psychopathic symptoms persisted.

CASE 10.—A corporation lorry driver, aged 41, was on a roof when bombs began to fall. He rushed downstairs and was thrown head forwards against the wall by the resulting blast. He did not lose consciousness but immediately developed persistent pain over his mastoids where operations had been performed thirty years before. Under evipan he revived some of his anxieties, of which the greatest was constituted by the conflict over his longing to seek shelter and his stubborn refusal to do so, not apparently because he had any phobia or latent phobia of closed spaces but because he identified shelter-philia with the characteristics of a race he saw fit to despise.

Among the air-raid reaction cases nail-biting was common, but shelter-phobia and compulsive traits less common than in the normal group. Bad work-records occurred along with unsuccessful marriages or poor reactions to marriage difficulties. Case 7, for instance, had (in addition to his heavily weighted family history) the cares of a fantastic affaire-de-cœur which only a socially inefficient person could have become involved in. Repressed anxiety in 4 cases ran parallel with increased irritability and grave suspicions which might be the forerunners of serious paranoid reactions; 7 showed very slight patchy amnesias which only close questioning revealed, with an inaccuracy about dates and events so small as to be easily overlooked. In 2 cases evipan investigation did not overcome this, though the patient in other ways was considerably improved.

ABSENCE OF FEAR

Taking the two groups it appears that total denial of fear is a poor prognostic sign. Contact with the cases shows that there are two types in which fear seems reduced and undeveloped. The first is the stable, well-trained individual—e.g., the regular policeman. The second is the adolescent whose desire to be up and about is very different from the man with shelter-phobia who cannot be confined. It would seem on the basis of a very few cases that the adolescent's apparent indifference is altered to normal anxiety when his work becomes more responsible, or he begins thinking of serious marriage.

DISCUSSION

In reviewing both groups one is impressed by two main features: the much commoner denial of anxiety feelings in the air-raid reaction cases as compared with the controls; and the preponderance of psychopathic traits in the reaction cases. Some of the controls *may* break down under further strain, but so far only one has done so.

It must be borne in mind that these 165 cases are only a partial cross-section. The evidence suggests that a large number of those who suffer from acute anxiety quickly become stabilised. The fact that there is obvious evidence of their anxiety necessitating attention at the first-aid post may itself be of assistance, particularly when steps are taken to reassure them that their reaction is natural. But conversion symptoms—especially the dyspepsias, complaints of inframammary pain and headaches seen in the outpatient department—must be occurring and it is probably important to convince such patients at the first session of the obvious connexion between the onset of the symptom and the acute dangers or terror. Having done so, reassurance about the normal nature of the reaction is as important as it is for the cases of acute emotional excitement seen at the first-aid post.

Of delayed neuroses we can only surmise, while collecting evidence from evacuation areas. But the question presents itself recurrently: how can some of these air-raid reactions be lessened? For, despite the optimistic tone of some writings, my own experience is that even with enthusiasm and evipan narcosis chronic conditions are developing.

Culpin and May Smith (1930), investigating factory workers, have rated psychological stability by a point

system. On this, obsessive-compulsive traits are rated as high handicaps. In this series the stable controls might have scored worse than those developing symptoms, since compulsive traits were commoner. The difference is possibly to be explained by the occurrence, in the factory, of constant tensions—in these cases, of one particular tension. As has been pointed out by others the obsessional character is afraid of unknown fears; air-raids have become known dangers.

An examination of recruits for civilian defence, and possibly a wider examination of persons in danger areas, should stress other factors. Of these I suggest that a history of the previous work-record (including an assessment of normal ambition and the recognition of abnormal unwillingness to accept responsibility), and the question "What makes you want to take up these new duties?" are important. Are methods of improving group-allegiances and teamwork fostered in the civilian defence services? Are team contests arranged between various stations? Is any effort made to arrange that station shall compete against station, shelter against shelter, on the lines of inter-regimental and intercompany contests in the Army, or the rivalry between divisions in the regular police.

It is natural that civilian defence workers should hesitate to admit their anxieties, but it is unnatural that they should deny them. Many of those who broke down did so, in part, because they were afraid of their fear. Sometimes this was fear of social ostracism, but, as one expressed it: "If I was to be afraid, I don't know what would happen. I might bust." When any service must recruit some persons of this type it is clear that reasonable expression of timidity and anxiety should be allowed if it is associated with those opportunities of corporate responsibility and wholesome competition which are so conducive to strengthening individual morale.

Lastly, in the laudable intention to prevent contagious hysteria the civilian defence services appear to accept certificates of debility provided not more than three weeks' absence at a time is granted. Some of these certificates are repeated after short intervals of inefficient labour. For some defence workers three weeks is too long; much shorter periods before return to situations of stress are desirable in many cases, perhaps in all. Immediate recognition of the man's incapacity to face arduous work is desirable, and for these rapid transfer to other work of national importance, more suited to their handicaps, may be desirable. This calls for closer coöperation between examining medical officers and the appropriate ministries.

SUMMARY

Of 134 cases of acute emotional reaction to air-raids admitted to a first-aid post in an area housing a highly emotional population only 6 returned for subsequent treatment. Even if half were evacuated the stability of the others is remarkable.

Full psychiatric examination of another 63 psychiatric patients attending hospital for subacute symptoms due to air-raid stress was compared with that of 102 controls from the surgical outpatient department.

Psychopathic traits were 2½ times as common in the psychiatric patients as in the controls, and the controls were far more conscious of the fear excited by aerial bombardment than the psychiatric patients. Shelter-phobia was present in 15 of the 102 controls.

The admission and acceptance of fear is a safeguard against breakdown in conditions of acute stress. This has a bearing on the selection of candidates for the civilian defence services, and a short psychiatric examination might eliminate a large proportion of unsuitable volunteers. In the defence services themselves methods of enhancing group-unity, and an admission of the strains and fears around would be likely to increase individual and corporate stability.

REFERENCES

Brown, F. (1941) *Lancet*, i, 686.
Culpin, M. and Smith, M. (1930), *Rep. industr. Hlth Res. Bd, Lond.* No. 61.
Curran, D. and Mallinson, W. (1940) *Lancet*, ii, 738.
— — (1941) *Brit. med. J.* i, 305.
Harrisson, T. (1941) *Ibid*, i, 573.
Mira, E. (1939) *Ibid*, i, 1217.
Sargant, W. and Slater, E. (1940) *Lancet*, ii, 1.

THE NEUROGENIC BLADDER

COMBINED TIDAL IRRIGATOR AND CYSTOMETER

OSCAR W. STEWART, M.D.
MAJOR R.C.A.M.C.

(*No. 1 Canadian Neurological Hospital*)

Donald Munro, in 1936, reiterated the long-recognised fact that urinary sepsis is the chief cause of death in any type of cord injury after the first week.[1] He reviewed the various types of abnormal behaviour found in the bladder, and their relation to the anatomical site of the spinal injury and to the variations in a given injury over a period. He also called attention to the influence which extraneous factors, such as infection—general and within the bladder itself—have on the behaviour of the bladder after cord injuries. To prevent cystitis and its complications, he described an apparatus for automatic periodic filling and emptying of the bladder.[2] Later reports have emphasised the value of this method of care of the bladder paralysed as a result of spinal injuries.

CLASSIFICATION

Physiological studies of the normal bladder and of the bladder showing disturbed function after spinal-cord lesions, have made it possible to correlate the different types of behaviour with the site of the lesion. The several workers who have contributed to this understanding (notably Holmes, Munro, Denny-Brown, Robertson, Langworthy, McLellan, Learmonth and Watkins) in the main divide the types of disordered function into three, depending on the site of the lesion—that is, on the part of the nervous control that is interrupted. The three types are: the spinal reflex bladder, the autonomous bladder and the atonic bladder. Even this classification is rough, for the related parts played by the visceral and autonomic nervous systems are not yet wholly understood, and the reasons for changes which follow, for example, injuries to the sacral spinal segments or the cauda equina are not clear. The classification applies to the ultimate and permanent state of the bladder after destructive lesions. It is important to remember this because immediately after any severe cord injury, regardless of site, paralysis of the bladder exists which is the same in every case and characterised by retention, atony of the bladder musculature, distention and finally overflow. This state has been spoken of as coexisting with "spinal shock," which signifies the temporary abolition, from a number of causes, of all spinal reflexes below the lesion. It is not until the dominant components of an imbalanced neurogenic control produce measurable physiological and clinical signs that we are able to recognise the characteristic type of abnormal behaviour in each case. Needless to say, there are intermediate stages from the state of spinal shock to any one of the ultimate types of neurogenic bladder.

The spinal reflex bladder ultimately results from a severe or complete lesion of the cord above the sacral segments. Automatic emptying is entirely brought about through the spinal reflex arc. The length of time required for the establishment of reflex bladder activity varies from weeks to months, but is greatly delayed by infection and improper care during the early stages. This is the desired end-result in such injuries, and the spinal reflex bladder is the most common type of neurogenic bladder to be dealt with.

Autonomous bladder.—This term is most commonly applied to the type of bladder which results from destruction of the sacral segments, conus medullaris, cauda equina, sacral plexus or the hypogastric plexuses. Both the afferent and the efferent fibres of the reflex arc are interrupted, and therefore no reflex activity capable of emptying the bladder is possible. Most workers describe increased tone and a high intravesical pressure in such a bladder, in contrast to the atonic bladder, where the sensory components alone are destroyed. Eventually, emptying of the autonomous bladder may be regularly accomplished by manual compression of the abdominal wall and straining. Intelligence, coöperation and ingenuity on the part of the patient and the physician can

1. *New Engl. J. Med.* 1936, **215**, 766.
2. Munro and Hahn, J. *Ibid*, 1935, **212**, 229.

reduce to some extent the inconveniences and hazards of this type of bladder. During the initial stage, the use of tidal irrigation gives the greatest protection.

Atonic bladder results when the sensory fibres alone are destroyed. This state is seen in tabes dorsalis, but rarely encountered in traumatic lesions. Because of the complete loss of sensation the bladder becomes greatly distended unless the patient is trained to empty the bladder regularly by compressing the abdominal wall. During the acute phase, however, tidal irrigation and drainage are again the most satisfactory methods of treatment.

A fourth type is usually mentioned—the *uninhibited neurogenic bladder*. Judging by its name this group should include all bladders devoid of cerebral inhibition, regardless of the site of interruption, but it is customary to apply the description only to those cases where cerebral inhibition is lost or interfered with by reason of injury to or disease of the cerebral hemispheres. It is often seen in cases of frontal-lobe damage, either by tumour or by trauma, with loss of frontal-lobe substance or disturbed frontal-lobe function. Precipitate micturition occurs and bladder sensation is greatly diminished. Where cerebral inhibition is complete, the cystometrogram record is similar to that found with the spinal reflex bladder.

TIDAL IRRIGATION AND THE CYSTOMETROGRAM

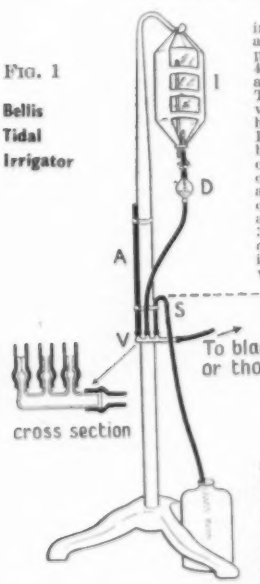
The chief task of the clinician confronted with a bladder paralysed from any cause whatever is to combat infection. Repeated catheterisations invariably lead to infection, and once infection is present retention and distention contribute to the subsequent complications which seriously affect the final result.

Munro was the first to emphasise the value of tidal irrigation in such cases, and he described an apparatus which he used with success. All who have treated "cord bladders" in this way find that the method, besides controlling infection, greatly reduces the difficulties of nursing and medical care. The need for regular catheterisation is eliminated and the hazards of bed-wetting avoided. Besides taxing nursing care, bed-wetting is a paramount factor in the development of bedsores, which add greatly to the difficulties of treatment.

Bellis [3] has described an apparatus for tidal irrigation which embraces the same general principles as that of Munro but is far simpler and just as effective (fig. 1). Automatic tidal irrigation, working on these principles, must take into account the tone of the bladder, so that the apparatus can be regulated to irrigate at desired intervals and with specified amounts of irrigating fluid. As the bladder tone changes adjustments must be made in the apparatus to ensure uniform and controlled tidal irrigation and drainage. The intravesical pressure can be measured by means of a cystometrogram as increasing amounts of fluid are run into the bladder. The simple cystometer described by Munro [4] is accurate enough for all clinical purposes. Fluid is run into the empty bladder through an indwelling catheter attached to the cystometer, which consists of an air vent and a glass tube manometer in series. The intravesical pressure is registered by the height of the column of fluid in the manometer tube and measured in cm. of water above the level of the symphysis pubis. By plotting the pressures at 50 c.cm. intervals, a curve can be drawn indicating the tone of the bladder musculature (detrusor muscle). Reflex contractions are likewise observed and recorded as a sudden rise in the pressure column due to the raised intravesical pressure. In addition to serving as a guide for tidal irrigation, the cystometrogram graphically pictures the changing state of the bladder from the initial stage of spinal shock to recovery in the less severe cases; or to the establishment of a spinal reflex bladder in the case of a complete cord lesion above the sacral segments (fig. 2). When the reflex contractions are observed to be sufficiently strong, tidal irrigation may be discontinued to allow the bladder to empty itself automatically. This step should be supervised carefully. After each reflex bladder emptying, the patient should be catheterised to determine the amount of residual urine. If the amount of residual urine is considerable and the patient develops symptoms, it may be necessary to continue the tidal irrigation until the detrusor tone is such that emptying is accomplished with little or no residual urine. The need for numerous cystometrograms during the period in which tidal irrigation is being used has led me to modify the apparatus described by Bellis so that a cystometer is added without harming the simplicity of the irrigator. The apparatus has, in fact, been simplified further by attaching a small glass tip with a pin-point opening (D in fig. 3) to the top of the air vent instead of incorporating this "valve" in the glass Dakin's tube itself. This change makes it possible to use the ordinary glass Dakin's tube which is generally available. In the Bellis apparatus this air-vent tube and valve are comparable to the reservoir bottle in the Munro apparatus, and in principle should not empty until the bladder is completely emptied. Actually, it is only necessary for the pin-point opening to be small enough to ensure that the amount of air entering the system during the siphonage of the bladder is not sufficient to break the siphon action; this, together with the efficiency of the apparatus, can be tested before use by attaching a rubber balloon to the rubber tube which would normally lead to the indwelling catheter.

FIG. 1

Bellis Tidal Irrigator

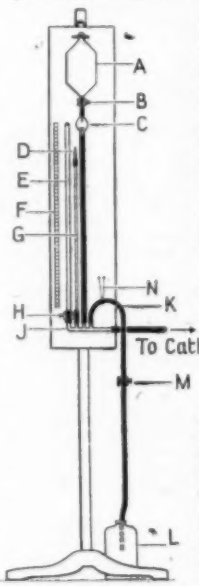


The irrigating fluid (I) is placed in a flask suspended at least 75 cm. above the level of the symphysis pubis. The flow is regulated at 40–60 drops per min. by means of a screw clamp above the drip (D). The drip should not have an air vent. The fluid then enters the horizontal arm of the modified glass Dakin's tube and passes into the bladder through the rubber tubing connected to the indwelling catheter. It also ascends into the air vent and manometer (A), which consists of a vertical glass tube about 6–7 mm. in diameter and 30–40 cm. long. At the bottom of this air vent a valve (V) is interposed. The opening of the valve has been narrowed by fusion so that it just admits the point of a pin. The height of the siphon tube (S) is adjusted to the desired pressure (FP) which the bladder must reach to initiate siphonage. When siphonage is instituted, the bladder is drained rapidly and the manometer slowly, because of the valve. Thus the bladder is completely emptied before the siphon is broken. In the tidal irrigation of the atonic bladder, a pressure of 2–5 cm. of water is recommended. This pressure should be increased to 10–15 cm. if the bladder detrusor is intact. When the apparatus is working properly, there are visible respiratory excursions in the manometer (Bellis [3]).

Note.—Description and illustration are taken from the original article by Bellis, and I have not been able to check them personally for accuracy.

FIG. 3

Tidal Irrigator and Cystometer Combined



A, reservoir; B, metal screw shut-off clamp; C, Murphy drip bulb (air vent in side closed); D, glass tube with end drawn out to pin-point opening, connected to the top of the air-vent tube by a short rubber tube; E, ¼ in. glass tubing to serve as manometer for measuring intravesical pressure; F, scale; G, air-vent tube (capillary tubing with inside diameter approx. ⅛ in.; H, metal clamp to shut off manometric tube when apparatus is in use as tidal irrigator; J, standard Dakin's glass tube with four outlets; K, siphon tubing; L, collecting bottle; M, metal screw-clamp to cut out siphon when doing cystometrograms; N, loop of cord supporting siphon tubing.

3. Bellis, C. J. *Surgery*, 1940, **8**, 791.

4. *New Engl. J. Med.* 1936, **214**, 617.

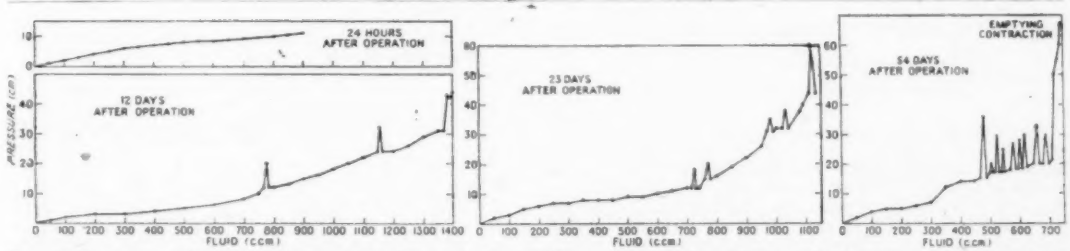


FIG. 2—Four consecutive cystometrogram records on a patient with a severe dorsal-cord lesion. Gradual return of detrusor tone and reflex contractions are shown. This patient was treated throughout by tidal irrigation and was evacuated to Canada with the set attached to a board and suspended by the side of his bed.

The use of the combined tidal irrigator and cystometer ensures accurate irrigation and drainage with known quantities of irrigating fluid and under known intravesical pressures, and makes it possible to follow the changing tone of the bladder musculature as often as is desired without a change-over in apparatus.

OPERATIONAL DETAILS

The fluid from the drip enters the horizontal arm of the glass Dakin's tube (J) and passes into the bladder through the rubber tubing connected to the indwelling catheter. It also ascends into the air vent (G) and into the siphon tubing (K) as the intravesical pressure rises. When the pressure within the bladder rises sufficiently to force the column of fluid over the siphon-tube loop, drainage of the bladder begins by siphonage. The column of fluid in the air vent roughly parallels that in the siphon-tube loop. When siphonage begins, fluid is drawn out of the air-vent tube at once and air is sucked in through the pin-point opening (D), but too slowly to break the siphon until the bladder is empty. When the bladder is completely empty the cycle begins again. It is always possible to tell at a glance if the apparatus is working properly, for respiratory excursions can be seen in the column of fluid in the air-vent tube. With any block between the system and the bladder these disappear. The indwelling catheter should be changed every 3 or 4 days. The patient should have the workings of this apparatus explained to him and be charged with noting the respiratory excursions and the rate of drip of the irrigating fluid.

For tidal irrigation the sterilised apparatus is assembled on a board to which it is attached by ties passed through holes in the board. The flask containing the irrigating fluid is suspended at least 75 cm. above the level of the Dakin's tube. The board is then suspended so that the Dakin's tube is level with the patient's symphysis pubis. The desired height of the siphon-tube loop is secured by suspending it with cord passed through holes in the board. Before the apparatus is connected to the indwelling catheter, fluid should be run through it to eliminate air. The apparatus is connected to the catheter by a glass connecting-tube which should have a lumen at least $\frac{1}{4}$ in. in diameter. The clamp (B) is regulated to allow the irrigating fluid to drip at the desired rate. The number of drops a minute depends on how many times a day the bladder is to be irrigated and by what quantity of fluid. For example, if it is desired that the bladder be emptied when 300 c.cm. have been run in, and this is to be done ten times a day, the rate of delivery is 125 c.cm. per hour or a little over 2 c.cm. per min., and the drops per min. would be about 50. In practice, this calculation must take into account the secretion of urine into the bladder, which goes on continually. If infection is present when tidal irrigation is begun the number of daily irrigations should be increased and therefore the rate of drip speeded up. This is true also if at any time during the course of convalescence symptoms of infection develop. Frequent irrigations will quickly clear the urine and the symptoms of toxicity. If symptoms of infection do occur during the period of tidal irrigation they usually mean that the apparatus is not working properly, and the cause should be looked for and corrected.

The height of the siphon loop is that which the intravesical pressure must reach to initiate siphonage. If the bladder is to be emptied when 300 c.cm. of fluid have been run in, the pressure within the bladder produced by this amount of fluid must be known so that the siphon loop can be set at this level. A cystometrogram is always done before tidal irrigation is begun, to give data both as to the level at which the siphon loop is to be set and the tone of the bladder musculature. Regular cystometrograms taken at short intervals are essential in regulating the rate of drip and the siphon-tube height, for as the bladder tone improves readjustments in both must be made.

For cystometry it is only necessary to close off the siphon tube by means of the clamp (M), and loosen the clamp (H) to admit fluid into the manometer tube for intravesical-pressure readings. With the glass Dakin's tube at the level of the symphysis pubis, the height of the column of fluid in the manometer measures the intravesical pressure. The bladder should be empty before starting the cystometrogram, and fluid should drip into the bladder at about 120 drops per min. Readings are usually taken at 50 c.cm. intervals. Bladder contractions are plotted whenever they occur. The cystometer incorporated in this combined apparatus is the same, in principle, as the one used by Munro. It may be possible to simplify this combination even further, but the one described here has proved useful in the management of war casualties.

For more detailed study of the bladder reactions and behaviour, a glass T-tube may be interposed at the junction of the manometer tube (E) and the arm of the Dakin's tube. The T-tube is connected to a tambour and writing pen which records continuously, on a moving drum, all changes in intravesical pressure.

Irrigating fluid.—Sterile normal saline or one of the mild antiseptic solutions may be used as an irrigating solution. At Colonel Leonard Colebrook's suggestion we have used on the last 6 cases a 0·5% solution of sulphanilamide in normal saline. Higher concentrations tend to crystalise out with the variations in room temperature. Our experience so far suggests that this solution is of considerable value. The sulphanilamide is not absorbed by the bladder mucosa in amounts detectable in the blood. With greater knowledge of the specificity of the of the sulphonamides for various infecting organisms, it may prove valuable to add solutions of other compounds in the series to the sulphanilamide solution.

SUMMARY

Continuous tidal irrigation and drainage in the care of the cord bladder is again advised as the best means of avoiding infection and other complications which continually threaten convalescence in cases of injury to the spinal cord.

Repeated cystometric studies are needed for the judicious use of tidal irrigation.

An apparatus is described combining a simple, practical tidal irrigator with a cystometer. Although alternating irrigation and drainage is entirely automatic, this apparatus must be used with understanding and intelligent supervision.

Lieut.-Colonel W. V. Cone, chief of the neurosurgical service, has helped and advised in all phases of this work. I wish also to thank Lieut.-Colonel E. W. J. Akins of the Royal Canadian Engineer Corps, who helped with charts and diagrams, and Sergeant A. D. Melville, R.C.E., for his drawings.

ORGANON LABORATORIES (London) are issuing 'Davitamon-five' tablets for the day-to-day prophylaxis and treatment of mild hypovitaminoses. Each tablet contains: 1000 i.u. vitamin A, 50 i.u. vitamin B_1, 200 i.u. vitamin C, 200 i.u. vitamin D, and 0·5 mg. PP. factor of the B complex.

SULPHONAMIDE COMPOUNDS IN FÆCES

FRANK HAWKING, D.M. OXFD

(National Institute for Medical Research)

THE introduction of sulphaguanidine for the treatment of bacillary dysentery (Marshall et al. 1940, 1941) is based on a new principle in the chemotherapy of sulphonamide compounds—the adoption of a compound which is poorly absorbed in the alimentary canal, so that its oral administration will produce relatively high concentrations among the contents of the large intestine. Previously the concentration of the sulphonamide compounds in the blood, urine and other body fluids has been exhaustively studied, but that in the fæces has received little attention. This paper describes an investigation of the fæcal concentrations obtained after oral administration of various sulphonamides. I hoped in this way to obtain information about their probable relative value in the treatment of bacillary dysentery.

The method used for chemical estimation was based on that given by Marshall and his colleagues (1941), modified so as to be more economical of reagents during war-time. Between 1 g. and 3 g. of fæces, obtained by sampling different parts of the specimen, was weighed out and emulsified in 30 ml. warm water; 7 ml. of 30% trichloracetic acid was added and the mixture was made up to 50 ml. and filtered through a fine paper. The rest of the estimation was performed according to the methods of Bratton and Marshall (1939).

RESULTS WITH CAT FÆCES

Adult cats weighing 1–3 kg. were used. They were given the compound (0·5 g. per kg. body-weight, suspended in gum acacia) by stomach-tube. Cats fed on a meat diet often defæcate only once in four days; by giving them bread and milk and raw liver, and by mixing phenolphthalein (0·2 g. per kg.) with the sulphonamide, motions (usually formed) were produced in one or two days. Blood samples were taken from the ear 6 hours after giving the drug (with a few exceptions as shown in the table). The results of this work are given in table I. Although there was some irregularity, all the compounds usually produced concentrations in the fæces considerably higher than their maximum solubility, indicating the passage of undissolved drug. Only one animal was observed with sulphanilamide, so that no conclusion can be drawn about this drug. The weight of the fæces varied from 5 to 15 g.; therefore on some occasions a considerable proportion (up to a third) of the dose given by mouth seems to have been excreted in the fæces. Though the dosage in these experiments may have been rather high, cats seem to be unsatisfactory for investigating the excretion of sulphonamides in fæces, since the amount of absorption in these animals bears little relation to that found in human subjects, as the following experiments show.

TABLE I—CONCENTRATION OF SULPHONAMIDE COMPOUNDS IN THE FÆCES OF CATS, AFTER A SINGLE ORAL DOSE OF 0·5 G. PER KG. BODY-WEIGHT

—	Cat	Fæces		Blood	
		Mg. per 100 ml.	Passed (hr. after drug)	Mg. per 100 ml.	Sample taken (hr. after drug)
Sulphaguanidine	1	89	24	0·37	24
	2	187	24	0·20	24
	3	1920 75 0	< 24 24 96	0·85	6
	4	3800 182	24 48	1·5	6
	5	22 75	96 144	..	
	6	360	24	2·6	6
Sulphanilamide	7	32	24	28 1·5	24
Sulphapyridine	8	3400	48	6·1 3·5	24
	9	49	48	3·1	6
	10	790 30	24 48	8·5	6
Sulphathiazole	11	4900 159	24 72	0·25	24
	12	4 1600 490	5 24 72	1·6	24
	13	1080	96	6·2	6
	14	2500 25 0	48 72 96	..	..
Sulphadiazine	15	3200	48	13·4 8·1	6 24
	16	150	24	9·0	6
	17	2800 9	24 48	3·7	6
	18	1600	24	11·2	6

RESULTS WITH HUMAN FÆCES

Observations on human fæces were made on 22 subjects—18 volunteers and 4 hospital patients who were receiving sulphonamide therapy for clinical reasons. A standard course was usually given to the volunteers, consisting of 3 g. after breakfast, 1 g. after midday and evening meals, and 1 g. after breakfast next morning. Urine specimens were collected over the first two 24-hour periods following the first dose. Any deviations from this standardised procedure are indicated in table II. The doses were somewhat lower than those which would be employed in actual therapy, but enough was given to make plain the differences between the various compounds. The specimens of fæces passed were mostly of normal consistence. Table II shows that under these conditions sulphaguanidine produces high concentrations in the fæces, confirming the findings of Marshall and his colleagues (1941) and of Anderson and Cruickshank (1941). The concentrations recorded are higher than 220 mg. per 100 ml. which is the solubility of sulphaguanidine at 37° C. (Marshall et al. 1940), thus indicating the presence of undissolved drug. In case 5, which received 9 g. sulphaguanidine by mouth, 1·3 g. was recovered from the fæces and 3·1 g. from the urine during the 48 hours after the first dose. Thus even with sulphaguanidine, the amount excreted in the urine was greater than that excreted in the fæces, and approximately half the amount given by mouth was still unaccounted for; either its excretion was delayed or it underwent chemical transformation in the body.

The other four compounds gave much lower concentrations in the fæces. In some of these cases—for example, those receiving sulphathiazole and one case receiving sulphapyridine—the concentration in the intestine might have been high enough to produce therapeutic action, especially if larger doses had been given; this may account for the favourable clinical reports which have been published on the use of sulphapyridine and sulphathiazole in the treatment of bacillary dysentery (Reitler and Marberg 1941, Ravenel and Smith 1941, Masefield 1941, Bell 1941, Cooper, Zucker and Wagoner 1941). Nevertheless the concentrations which they produce in the fæces are clearly much inferior to those following administration of sulphaguanidine. This is true even for sulphabenzamide (sulphanilylbenzamide) which was reported by Brownlee and Tonkin (1941) to resemble sulphaguanidine in its poor absorption from the intestine as judged by animal experiments. According to the limited number of results here described, it shows little or no advantage over sulphathiazole. The 5 normal people who received sulphabenzamide did not experience nausea or other discomfort from the drug.

EFFECT ON FÆCAL BACTERIA

Experiments were also made by feeding mice on a diet containing a sulphonamide compound and examining the numbers of organisms which could be cultivated from

TABLE II—CONCENTRATION OF SULPHONAMIDE COMPOUNDS IN HUMAN FÆCES, BLOOD AND URINE

—	Subject	Dosage	Fæces: When passed (hr. after 1st dose)	Fæces: Concentration (mg./100 ml.)	Blood concentration (mg./100 ml.)	Urine: When passed (hr. after 1st dose)	Urine: Concentration (mg./100 ml.)
Sulphaguanidine	1	Standard	24 48	384 635	1·6 2·1*	1st 24 2nd 24	323 22
	2	,,	24	2500	1·7	1st 24	71
	3	,,	24	560	1·7	1st 24	66
	4	9 A.M. 3 g. 2 P.M. 1 g.	3 24	0 3900	1	at 4 4–8	37 125
	5	10 P.M. 3 g.‡ 9 A.M. 2 g. 2 P.M. 2 g. 8 P.M. 2 g.	12 17 36	495 700 2530	..	1st 24 2nd 24	186 (243) 44 (74)
Sulphapyridine	6	1 g. 4 hrly	..	3·5	..	1st 24 2nd 24	96 135
	7	Standard	24 50	4 13	2·1 3·4†	1st 24 2nd 24	78 (105) 24
	8	1 g. 4 hrly	..	300	6·7	1st 24	320
	9	Standard	6 30	0 0	2·8	1st 24	42
	10	,,	8 48	0 4	3·1	1st 24	44 (147)
Sulphathiazole	11	Standard	12 18 24	11 69 72	2·8	1st 24	105 (132)
	12	,,	6 12	2·4 12	3·1	1st 24	68 (89)
	13	,,	8 24	20 22	2·2	1st 24	69
	14	1 g. t.d.s.	..	38	1	1st 24	17 (80)
Sulphadiazine	15	2 g., 1 g. 1 g., 1 g.	17 34 41 48	9 9·7 tr. 5·6	5·2 (5·2)	1st 24 2nd 24	37 (37) 31 (43)
	16	2 g., 1 g. 1 g., 1 g.	6 25	5·2 tr.	2·0 (2·2)	1st 24 2nd 24	105 (105) 99 (170)
	17	2 g., 1 g. 1 g., 1 g.	13	0	3·8 (4)	1st 24	68 (128)
Sulphabenzamide	18	1 P.M. 1 g. 8 P.M. 1 g.	19 24	22 15	1·3 (1·4)	1st 4 4–18	11·8 (12·3) 32 (38)
	19	2 g., 1 g. 1 g., 1 g.	9 11 48	14 12 0	1·7 (2)	1st 24 2nd 24	51 (102) 43 (88)
	20	Standard	24 54	.. 72	1·5 (2·3)	1st 24 2nd 24	68 (99) 39 (86)
	21	,,	54	31	4·9 (4·9)	at 6 6–48	86 (115) 25 (56)
	22	,,	9 23 50	0 30 67	7·4 (7·4)	at 26	66 (100)

Subject 5 had diarrhœa, subject 6 concussion, subject 8 pneumonia and subject 14 pyelitis; all the rest were healthy volunteers.

Concentrations of total sulphonamide are shown in parentheses; all other figures are for concentration of free drug.

Blood samples were taken 4 hours after the 1st dose except where otherwise indicated. * at 8 hours. † at 24 hours. ‡ vomited at 5 A.M.

the fæces on plates of McConkey's agar (Marshall et al. 1940). With diets containing 4% of the drug (which proved toxic to many of the mice) the concentration of sulphathiazole in the fæces ranged from 80 to 400 mg. per 100 ml. and that of sulphaguanidine from 600 to 1300 mg. per 100 ml. The effect on the number of organisms cultivated from the fæces was somewhat irregular, but usually sulphathiazole produced a great diminution in their number, not amounting to complete suppression, while sulphaguanidine seemed to be much less effective. From these rough experiments it was concluded that if a high concentration of sulphathiazole could be produced in the fæces it would probably be more effective in controlling the bacterial flora than would sulphaguanidine. But since sulphaguanidine produces much higher concentrations in human fæces than sulphathiazole it is probable that under clinical conditions the advantage lies with sulphaguanidine. Confirmation of this, by comparing a series of dysentery cases treated with sulphaguanidine and a similar series treated with sulphathiazole would be valuable.

DISCUSSION

These observations made on a limited number of human subjects, most of whom were normal, indicate that sulphaguanidine given by mouth produces much higher concentrations in the fæces than any of the other compounds tested. Admittedly the intestine of the normal person differs from that of a patient with dysentery. In the latter the intestinal contents pass through more quickly, so that the time available for absorption is less; moreover, the volume of the stools passed is greater, so that the concentration of drugs in them is correspondingly diminished. Nevertheless, these differences should affect all the compounds in much the same way. Judgment as to the relative value of the different compounds for the treatment of bacillary dysentery must ultimately depend on a comparison of their clinical effects. Meanwhile, this work supports the view that sulphaguanidine is likely to prove more useful than any of the other four here studied.

SUMMARY

A study has been made of the concentrations of various sulphonamide compounds in the fæces of cats, mice and men after administration by mouth.

The fæces of cats often contained high concentrations of all the compounds examined.

In mice, sulphathiazole seemed to be more effective than sulphaguanidine in diminishing the number of bacteria present in the fæces, but the doses required to demonstrate this were toxic.

In the fæces of normal people, sulphaguanidine was excreted in high concentrations, while sulphapyridine, sulphathiazole, sulphadiazine and sulphanilylbenzamide was found only in fairly low concentrations. These results seem to support the view that sulphaguanidine will prove particularly suitable for the treatment of bacillary dysentery.

I wish to thank the various volunteers, and the superintendent and medical and nursing staffs of New End Hospital, Hampstead; Mr. George Brownlee, Ph.D., Colonel Leonard Colebrook, Dr. Robert Cruickshank, and Messrs. May & Baker Ltd. for supplying the compounds; Miss Marjorie Kuck and Mr. R. E. Leaver for technical assistance.

REFERENCES

Anderson, D. E. W. and Cruickshank, R. (1941) *Brit. med. J.* ii, 497.
Bell, G. J. (1941) *Lancet*, ii, 101.
Bratton, A. C. and Marshall, E. K. jun. (1939) *J. biol. Chem.* **128**, 537.
Brownlee, G. and Tonkin, I. M. (1941) *Nature, Lond.* **148**, 167.
Cooper, M. L., Zucker, R. L. and Wagoner, S. (1941) *J. Amer. med. Ass.* **117**, 1520.
Marshall, Bratton, White H. J. and Litchfield, J. T. jun. (1940) *Bull. Johns Hopk. Hosp.* **67**, 163.
— — Edwards, L. B. and Walker, E. (1941) *Ibid*, **68**, 94.
Masefield, W. G. (1941) *Brit. med. J.* ii, 199.
Ravenel, S. F. and Smith, D. L. (1941) *Sth med. J., Nashville*, **34**, 504 (abstracted *Trop. Dis. Bull.* 1941, **38**, 600).
Reitler, R. and Marberg, K. (1941) *Brit. med. J.* i, 277.

Messrs. JOHN WYETH & BROTHER (London) announce a new product, 'Alulotion,' consisting of ammoniated mercury with kaolin. It is intended for the treatment of impetigo and other skin diseases, and is available in bottles containing 3 fl. oz.

MENINGOCOCCAL ENDOCARDITIS

J. G. CUTTS, M.R.C.S. G. KRAFFT, M.R.C.S.

P. H. WILLCOX, M.B. CAMB., M.R.C.P.

MEDICAL OFFICERS, EMS

THE meningococcus is one of the rarest of the organisms which attack the heart valves and endocardium. The other pathogenic cocci which do so are *Streptococcus viridans*, *Strep. hæmolyticus*, gonococcus, pneumococcus and staphylococcus, in that order of frequency. Although meningococcal endocarditis has been noted as a rare complication of meningococcal septicæmia during the last forty years, particularly in America, it is remarkable that no cases seem to have been reported in this country during or since the recent epidemic of cerebrospinal fever, in which meningococcal septicæmia as a cause of unexplained pyrexia was increasingly recognised. Among the 17 cases of meningococcal septicæmia reported by Stott and Copeman (1940), and the 26 cases in Canadians described by Dickson and his colleagues (1941), endocarditis was never diagnosed. The clinical picture of septicæmia—in which fever, muscle and joint pains and skin lesions are prominent—is quite distinct from that of meningococcal endocarditis.

Since 1902, when meningococcal septicæmia was originally described by Salomon, some 24 cases of infection of the heart valves by the meningococcus have been reported. Over half of these have been complicated by fatal terminal meningitis. The valvular lesions, consisting of ulcerative destruction with vegetations on the mitral or aortic valves or both, have been demonstrated at autopsy. In several cases (Mackarell 1915, Stevenson 1931) the organism has been found in the heart valves. In almost all cases the lesion was suspected during life on account of persistent fever, cardiac murmurs, blood-cultures and embolic phenomena. The interval between the original infection and the terminal meningitis varies from 8 months (Gwynn 1931) to 7 days (Hartwell 1939), the usual period being less than 6 weeks.

Warfield and Walker (1903) described a case with daily intermittent fever, headache, delirium and herpes, in which the patient died after a month. An ulcerative lesion of the mitral valve was found at autopsy but no evidence of meningitis; there were renal and splenic infarcts. Similar cases have been recorded in America since. Worster-Drought and Kennedy (1919) diagnosed the lesion in their case during the second week, by blood-culture and by apical systolic and diastolic murmurs; the illness lasted 6 weeks. Cases where the illness lasts many weeks have been recorded, but are rare. Graham Steell (1906) alluded to the occasional association of malignant endocarditis with cerebrospinal fever, and Broadbent (1906) stated that the meningococcus may rarely be the cause of that disease. Of the 12 cases of this type which we have been able to trace, 5 recovered from an illness indistinguishable from subacute bacterial endocarditis, and the organism was cultured from the blood. The remaining 7 died after some months, only one having lived for as long as 8 months (Gwynn 1931). In 4 of these, meningitis was found at autopsy, and in 5 the meningococcus was recovered from the vegetations. In only one case was there a history of rheumatic fever.

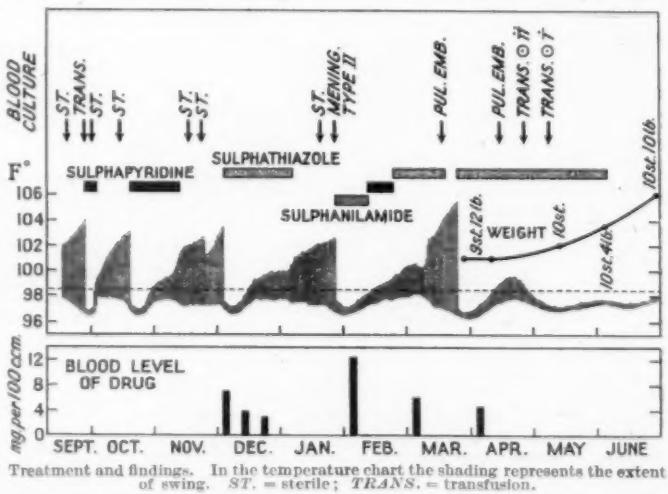
The temperature in these cases is typically of the daily intermittent type and the patient's condition is relatively good despite the degree and duration of the fever (Masters 1931). Clubbing of the fingers is absent. Our case is of interest on account of its response to sulphonamides. It seems that these must be given in full doses over a long period.

CASE-HISTORY

A sergeant of 27 was admitted to an EMS hospital on Sept. 12, 1940, with malaise, profuse night sweats and anæmia; he had no other symptoms. In 1936 he had been ill for 6 weeks with gastritis, relieved by alkalis and dieting. He was on active service in Palestine during 1937–38, and had been perfectly fit up to the onset of the present illness. There was no history of rheumatic fever. He was called up in September, 1939, and soon began to feel off colour. His malaise became worse in January, 1940, and he complained of epigastric pain after meals, relieved by alkalis, but he was able to continue on duty until the autumn. He was admitted to a hospital other than ours on Sept. 3, 1940, with cough, night sweats, epigastric tenderness, slight splenomegaly, and temperature swinging to 103° F. Blood-count: red cells 5,500,000; Hb. 57%; white cells 9900; sedimentation-rate 62 mm. per hr. A rough diastolic murmur was heard at the aortic area, with a soft systolic apical murmur; fine crepitations at the lung bases. Sulphapyridine, 1 g. every 4 hours, for 2 days brought the temperature down, and the drug was then discontinued. When he came under our care, 9 days later, his temperature was normal but started to swing to 103° F. almost at once. Blood-counts showed an increase in the hypochromic anæmia, but no other change; cultures sterile. The patient became increasingly ill. Urine showed a cloud of albumin with some red cells. A fine petechial eruption appeared on the hands and feet. Agglutination reactions negative to the enteric group of organisms; no malarial parasites found. A diagnosis of bacterial endocarditis was made.

On Sept. 21 a blood-transfusion of ¾ pint was given. A week later a course of sulphapyridine was begun with dramatic effect. He changed within 8 hours of the first dose from fevered prostration to quiet ease. This change was later repeated whenever chemotherapy was re-instituted after having been withheld for a time (see chart). On only two occasions—during March and towards the end of April—did the drug fail to control the temperature, the cause in each case being a right basal pulmonary embolism. A radiogram taken on March 28 showed an enlarged heart and consolidation at the right base, both of which were also demonstrable clinically. The sulphonamides were withdrawn at intervals in order that blood-cultures might be obtained, but these were negative until Jan. 29, 1941, when a group II meningococcus was reported. After this, sulphonamides were given regularly every 4 hours until June 3, when the patient appeared to be cured. After the first pulmonary embolism the drug failed to control the fever and was accordingly withdrawn for a few days; and for a fortnight before the embolism some variations were tried, to determine the minimum dose. Otherwise there were no breaks in the sulphonamide therapy.

In May the patient's weight started to rise, and in June, after the temperature had been normal for over a month, the drug was gradually withdrawn. By then he had no fever. His sedimentation-rate was now 7 mm. per hr. The anæmia had been cured by two blood-transfusions and large doses of iron; white cells remained remarkably constant at about 14,000 per c.mm., and only a few red cells were found in the urine. Radiologically, heart and lungs were normal; an electrocardiogram showed no signs of myocardial damage, though a soft basal diastolic murmur persisted for many months, being loudest to the left of the sternum. He remained under our care for a further 4 months, during which



Treatment and findings. In the temperature chart the shading represents the extent of swing. *ST.* = sterile; *TRANS.* = transfusion.

there was no rise in temperature and he gained weight steadily.

In the 9 months of his illness he was given a total of 780 g. of sulphonamide: sulphanilamide 90 g., sulphapyridine 130 g., and sulphathiazole 560 g. Changes were made to avoid renal damage, and the dose was finally fixed at 1 g. of sulphathiazole every 4 hours. Sulphapyridine had the most depressing effect on the patient, but sulphathiazole did not upset him in the least and he took this drug continuously for 10 weeks without a complaint.

DISCUSSION

Daily intermittent fever up to 105° F. is often seen in meningococcal septicæmias and is characteristic of cases of gonococcal and meningococcal endocarditis. Its dramatic control each time the sulphonamides were given, and its recrudescence on withdrawal indicated the lethal effect of these drugs on all circulating organisms, and their failure to overcome the focus of origin on the heart valves. The severity of the anæmia and the presence of blood in appreciable quantities in the urine were thought to contra-indicate the administration of heparin, in view of the dangerous consequences which have sometimes followed its use. Indeed, the sulphonamides were given with some anxiety lest renal complications might ensue.

SUMMARY

A man with meningococcal endocarditis recovered after nine months' chemotherapy, during which he received 90 g. of sulphanilamide, 130 g. of sulphapyridine and 560 g. of sulphathiazole.

Sulphonamides may thus offer a hope of cure in a condition which has hitherto been nearly always fatal.

We wish to thank Dr. V. L. Connolly, medical superintendent of this hospital, and Dr. Reginald Miller for permission to publish this case; Colonel Leonard Colebrook and Dr. C. W. Morley for their work on the bacteriological investigations, and Mr. Cowfield for his blood estimations of the sulphonamides. We are also indebted to Dr. W. R. Thrower, of May and Baker Ltd. for supplying us with sulphathiazole.

REFERENCES

Broadbent, W. H. and Broadbent, J. (1906) Heart Disease, London.
Dickson, R. C., McKinnon, N. E., Magner, D. and McGillivray, N. B. (1941) *Lancet*, ii, 631.
Gwynn, N. B. (1931) *Arch. intern. Medicine*, **48**, p. 1110.
Hartwell, R. M. (1939) *Amer. J. Dis. Child.* **58**, p. 823.
Mackarell, W. W. (1915) *J. R. Army med. Cps*, **25**, 353.
Masters, A. M. (1931) *J. Amer. med. Ass.* **96**, 164.
Saloman, H. (1902) *Berl. klin. Wschr.* **39**, 1045.
Steell, G. (1906) Textbook of Diseases of the Heart, Manchester.
Stevenson, W. D. H. (1931) *Brit. med. J.* ii, 1173.
Stott, A. W. and Copeman, W. S. C. (1940) *Lancet*, i, 1116.
Warfield, L. M. and Walker, J. K. (1903) *Bull. Ayer clin. Lab.* **1**, 81.
Worster-Drought, C. and Kennedy, A. M. (1919) Cerebro-spinal Fever, London, p. 347.

A HEREDITARY TENDENCY TO HERNIA

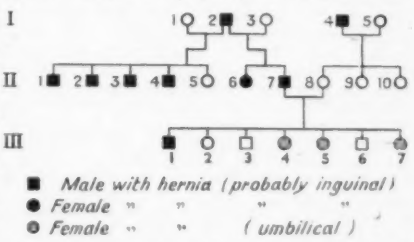
PHILIP EVANS, M.D., M.SC. MANC., M.R.C.P.
PHYSICIAN, EMS; HONORARY ASSISTANT PHYSICIAN TO THE CHILDREN'S DEPARTMENT, KING'S COLLEGE HOSPITAL

A QUARTER of all patients with hernia give a history of hernia in parents or grand-parents (Watson 1938). The pedigree reproduced here shows an unusual proportion of a family to be affected in this way. The value of the information is limited, because the children in generation III are young and may yet develop inguinal hernia, while the adults in generations I and II would probably not know if they had temporary umbilical hernias in infancy.

In generation I.—No. 2 married twice. He had a double rupture and wore a truss for years; this information was supplied by II no. 8 after she had consulted her husband II no. 7. No. 4 developed a hernia at the age of 74 and wore a truss.

II.—No. 1 developed a hernia at the age of 4 years and wore a truss until he was at least 18 years old. Nos. 2, 3 and 4 have hernias but no details are known. The exact ages are unknown, but all are over 45. No. 6 is ruptured, age now between 42 and 45. No. 7 is 41 years old. He developed a hernia in one groin at the age of 30, and it was cured by operation soon afterwards. When he was 38 a hernia appeared in the other groin and was treated by operation a year later.

III.—No. 1 is 11 years old; he had a right inguinal hernia in infancy, with a radical cure at the age of 1¼. About a year later a left inguinal hernia developed, and was treated operatively 3 years afterwards. On examination the inguinal operation scars were visible, the left testis was in the scrotum, the right was fixed subcutaneously in the region of the external ring. No. 2 is aged 8, and has no rupture. No. 3 is aged 7, and has no rupture. No. 4 is aged 6; his navel stuck out after birth and was strapped by the district nurse for 6 months, after which it was all right. No. 5 is aged 4; the navel was "turned inside out" after birth and was strapped by the nurse for a year; no rupture now. No. 6 is aged 3, and has no rupture. No. 7 is aged 1¼; she was a small premature baby and now weighs 18 lb.; she started to walk, holding on to the furniture, 6 weeks ago, and the navel was then noticed to be "turned inside out"; she has a small umbilical hernia, and there is one inch of separation of the recti.



In brief, a man with hernia had 5 sons, all with hernia, and 2 daughters, 1 with hernia. One of his sons married a woman whose father developed a hernia late in life. The eldest son of this union developed hernia as a child. These hernias were probably inguinal, but in addition 3 of the 6 children in the third generation had umbilical hernias in infancy. Umbilical hernia and divarication of the recti are common in American negro babies, but 3 instances in an English sibship are unusual.

Macready (1893), after careful study, concluded that inheritance was an agent (though perhaps a remote one), in the production of hernia. Watson (1938) saw a patient with inguinal hernia and partially descended testis who said that his father and his father's father had had the same condition. Hanrart (cited by de Lange 1936), Stransky (1925–26), de Lange (1936) and Kellett (1939) have reported the development of bilateral inguinal herniation in identical twins, which may be taken as evidence of a constitutional but not necessarily hereditary tendency to hernia. The anatomical or physiological basis of the tendency is unknown, but this note is written in the hope that others, particularly the family doctors of patients with hernia, will be able to produce further and more detailed information about its inheritance.

SUMMARY

There is a familial tendency to hernia.

An account is given of a family of 22 members of whom 12 had inguinal or umbilical hernias.

REFERENCES

Kellett, C. E. (1939) *Arch. Dis. Childh.* **14**, 265.
de Lange, C. (1936) *Ibid*, **11**, 39.
Macready, J. F. C. (1893) A Treatise on Ruptures, London.
Stransky, E. (1925–26) *Mschr. Kinderheilk.* **31**, 613.
Watson, L. F. (1938) Hernia, London.

MEASURE FOR VITAMIN C.—Use of the oxidation-reduction indicator dichlorophenolindophenol, for the estimation of vitamin C in biological fluids and foodstuffs, is widespread. A revised edition of a booklet on the method (The Colorimetric Determination of Oxidation-Reduction Balance, 3rd ed. Pp. 22) has just been published by British Drug Houses, and is timely. The theory of the method is well summarised, but the authors do not go deeply into the underlying mathematics and physics. The value of the book, which is free on request, would have been enhanced by a table of references.

Reviews of Books

The Man who Lived for Tomorrow

A biography of William Hallock Park, M.D. WADE W. OLIVER. New York: E. P. Dutton. Pp. 507. $3.75.

THE title of this book aptly describes W. H. Park. In 1895 the death-rate from diphtheria in New York City was 250 per 100,000; in 1936, when the William Hallock Park Laboratory was dedicated, the rate was less than 1 per 100,000. His remarkable record in the fight against diphtheria is told clearly and unsensationally. It is a far cry from 1888, when an American professor of children's diseases proclaimed infected sewer gas to be the cause of diphtheria, to Park's last years (he died in 1939), when scientists were chiefly concerned to improve a prophylaxis which was giving sound protection against diphtheria to 95% of those immunised. Yet it is salutary to modern pride to recall that as early as 1886 Loeffler used the guineapig test to recognise avirulent diphtheria-like bacilli, and that in 1892 intubation was the method of choice in the Willard Parker Hospital. Park, in 1893, was connected with what claims to be the first diagnostic laboratory ever established by a department of health; in 1894 he watched the cheering results obtained with the first antitoxin brought from Europe to America, and saw public subscription bring in 88000 to buy 60 horses for the manufacture of the new marvel. As long ago as 1895 antitoxin was provided free in New York City to doctors attending patients unable to pay for it.

Park's long history of association with diphtheria never faltered; he took measures to reduce serum rashes, based on the work of Banzhaf and Gibson on concentration; in 1913 he demonstrated to America the soundness of the Schick test; from 1914 onwards, in the first field-test ever properly controlled, he established the high value of active immunisation with toxin-antitoxin mixtures; and in 1933 he immunised in public the millionth child in New York City—the first child of the second million being injected by Bela Schick himself. Park wrote successful books on bacteriology and on public health; thanks to his energy every advance in the fields of tuberculosis, meningitis, typhoid, poliomyelitis, scarlet fever and pneumonia was promptly and judiciously applied in his city. Though a pioneer he was not a great scientific discoverer; but he was indefatigable in using all sound procedures straight away and in having new promising ones tried under his critical eye. These and other events from the life of a devoted public servant of unfailingly kindly temperament are soundly documented and set forth soberly and well.

Synopsis of Diseases of the Heart and Arteries

(2nd ed.) GEORGE R. HERRMANN, M.S., M.D., F.A.C.P. London: Henry Kimpton. Pp. 468. 25*s*.

THIS synopsis can be recommended though in this country the price may be considered rather high. It is more a practical textbook than a synopsis; the whole of cardiology, including peripheral vascular disease, is adequately covered. Type and reproductions are of a uniformly high standard, except for one of the electrocardiograms. Now and again statements appear which will not be universally accepted, such as: "most patients with heart disease are of a nervous temperament." Some may become "nervous" as a result of faulty treatment, but many are placid. A topically valuable section is the concluding one on military cardiovascular examinations, based largely on experience of what the author refers to as "World War I." Kymography, radiology and electrocardiography have all received adequate attention, but unnecessary space is not devoted to them at the expense of clinical aspects. Barring the index, which needs some revision, the whole work is essentially practical.

War in the Mind

CHARLES BERG, M.D. Lond., D.P.M., physician to the Tavistock Clinic. London: Macaulay Press. Pp. 272. 8*s*. 6*d*.

Dr. Berg says in the preface that he has aimed to interest the general reader and to "provide the would-be practitioner with an easy, practical and I hope even an entertaining introduction to the subject": the subject is psycho-analysis. With candour he reproduces a letter he had from Professor Freud, containing the passage—"You will understand that I entertain certain suspicions against the technique of analysts who have made the popularisation of analysis their aim." The ordinary medical reader for his part entertains certain suspicions about the discrepancy between the psycho-analyst insisting upon a minimum of four years training in this subject and the psycho-analyst writing an easy introduction not only for the physician but (see dust-cover) "for the student of his own and other people's psychology." The non-medical student of his own and other people's psychology may after reading the easy introduction decide to attempt a little psycho-analysis on his own, expecting the remarkable successes detailed in the case-histories composing this book. Certainly Dr. Berg gives little indication of the limits of psycho-analytic treatment, and there is an odd "postscript for psychiatrists" with Lamarckian implications. Nevertheless the writer has attained his object: the book is an easy, practical and entertaining introduction to psycho-analysis.

Gould's Medical Dictionary

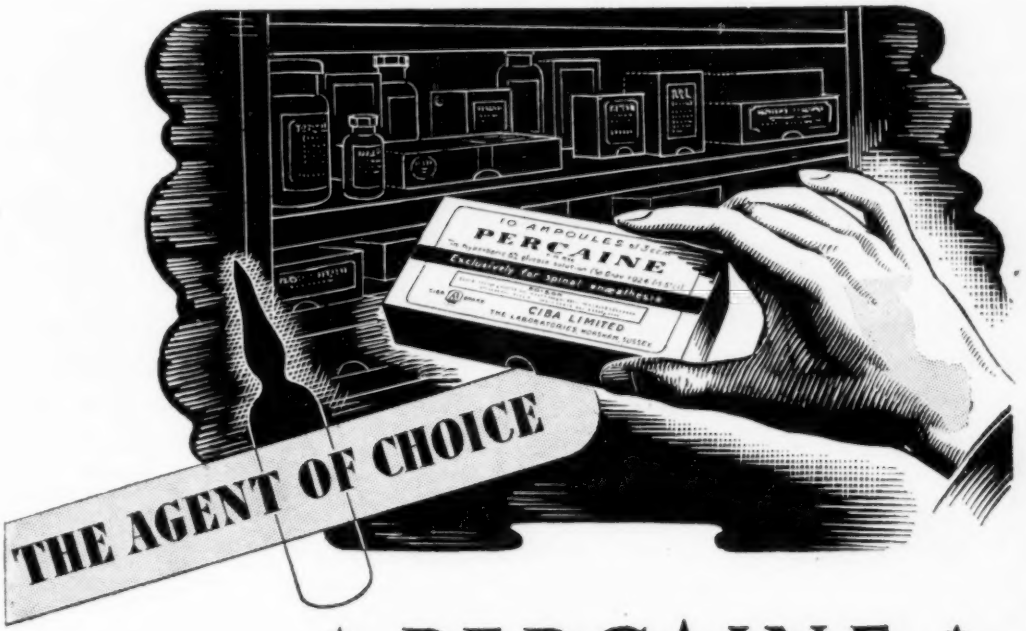
(5th ed.) Editor: C. V. BROWNLOW. London: H. K. Lewis. Pp. 1528. 36*s*.

Dr. George Gould issued his first medical dictionary in 1890 under a sense of vocation, for he claimed that no monograph or textbook has so far-reaching and lasting influence as a modern encyclopædic dictionary. And he agrees with Simon Browne that we should "thank God for everything and therefore for dictionary makers." He has had his reward by having as many readers as Liverpool has inhabitants—and not only in America, for no other English-speaking country has yet produced a first-rate medical lexicographer. This edition has been enlarged by several hundred new words and by the addition of tables of prefixes and suffixes. The print and arrangement are uniformly good, but the illustrations are hardly worthy of the text. To be adequate they would require a companion atlas. One feels too that a little more grouping of information might have been attempted; for example, the reader seeking information about sulphonamides would have welcomed a list of the chief ones now on the market, instead of being told to "see sulfanilamide, prontosil and others of the sulfonamide group." And the student of the salmonella organisms might have been spared the task of hunting through 4½ pages of tables for his facts. But no doctor could have the volume on his desk without being kept safely in the strait literary way.

Happy Marriage

NORMAN E. HIMES. London: Allen and Unwin. Pp. 368. 12*s*. 6*d*.

Dr. Norman Himes, who has already contributed much to the literature on birth control and allied subjects, has here done exceptionally well; this practical book deals with the many problems of sexual and married life, in a way which will help the reader without annoying him. Here is no preaching of an elder to the young, no tedious moralising, but a mass of information and constructive advice on almost every aspect of heterosexual relationship. Dr. Himes suggests how to look for a mate and how to choose one; how to predict the chances of happiness in marriage; discusses the engagement period and the pros and cons of early marriage; advises on whether to buy or lease a house; considers whether wives should work; gives hints on balancing the family budget and on making the best use of money; ruminates over factors influencing happiness in marriage and on the art of getting along with your mate; and ends with four brief but excellent chapters on sex life and adjustment in marriage, birth control and sterility. There are many references to modern statistical findings particularly those of Terman, Burgess and Cottrell; thus the views expressed are based on more than personal opinion or impression. The marriage prediction and adjustment tests devised by Burgess and Cottrell are discussed and set out in detail; doing the tests provides good winter evening entertainment though some of us may be disappointed to find we can only get a third or fourth class pass. The book has been adapted for the English reader by Lella Secor Florence.



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Brit. J. Surg., *1941*, **29**, *168.*

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THE LANCET
LONDON: SATURDAY, MARCH 7, 1942

CALLING IN THE SURGEON FOR PEPTIC ULCER

BILLROTH performed the first "Billroth I" operation in 1881 for the removal of a carcinoma of the pylorus.[1] Later the same year a young pupil of his, WÖLFLER, attempted the master's operation on a similar case, but found the tumour fixed and the liver involved; he began, no doubt regretfully, to close the abdomen, when NICOLODANI, an assistant, whispered in his ear. WÖLFLER picked up the jejunum, brought it across the front of the colon with a long loop and attached it to the anterior surface of the stomach. That was the birth of gastro-enterostomy, the impromptu first execution of an operation whose subsequent fortunes, as well as whose performances, have been many and varied. In the earlier part of this century the discovery of duodenal ulcer as a disease, combined with the relative simplicity and safety of the operation and the optimism of surgery in the heyday of its expansion, made gastro-enterostomy popular not only for ulcer or for pyloric obstruction but for a wide variety of functional disorders of the stomach as well. Since then its use has been restricted to cases of organic disease, but even among them its application has of late years been steadily curtailed. One might have expected that after sixty years its value and its limitations would have been clearly defined; that they are not yet plainly evident is due in part to the extraordinary variation in the natural history of peptic ulcers and in part to the lack of critical appraisal on the part of surgeons and physicians and to the inadequacy of their long-term records. The same is true of other operations for the relief of peptic ulcer. It is not yet possible to turn from the literature to Mr. Smith with his uncomplicated duodenal ulcer and say with confidence that if operated on in such and such a way he will have an *x* per cent. chance of cure or a tolerably comfortable life, a *y* per cent. chance of this or that subsequent complication, and a *z* per cent. chance of postoperative death, and to compare these prospects with those he might expect under good medical management. Nor will such precision ever be attainable, for Mr. Smith's future way of life, Mr. Smith's "constitution," and even the quality of Mr. Smith's surgeon and physician are all imponderables. Mr. Smith's general practitioner, however, must constantly strive to get a little nearer such precision, for his is the major voice in the choice of Mr. Smith's treatment. So he should be aware of the trend of good surgical experience.

In the Mayo Clinic, where the presence of malignancy in chronic peptic ulcer of the stomach is held to be 8–10%, surgical treatment is undertaken in 60% of patients with gastric ulcers.[2] Of 105 patients in 1940, 88 were submitted to partial gastrectomy, 12 to gastro-enterostomy, and 5 to local excision; only one of those died, after a partial gastrectomy. If it were justifiable to generalise from those figures, it would be clear that gastrectomy is the treatment of choice because the likelihood of malignancy is so much greater than the risk of operative death. In the Massachusetts General Hospital in 1930–39,[3] 14% of cases diagnosed as gastric ulcer proved to be malignant. Of a whole group of 277 cases, 92 were operated on: 69 underwent partial gastrectomy, 23 gastro-enterostomy. The fatality from partial gastrectomy for benign ulcer was 6–9%. The margin between this and 14% is less than the Mayo Clinic figures, but still seems to justify partial gastrectomy as the treatment of choice. However, when the site of the ulcer is taken into account, it appears that only about 10% of lesser-curve ulcers are found to be malignant, compared with 65% of prepyloric ulcers and 100% of greater-curve ulcers. Weighing operative risk against the risk of malignancy in lesser-curve ulcers no longer gives a clear-cut indication for gastrectomy—opinion would incline towards the operation in the case of larger ulcers and in older people, away from it in smaller ulcers and in younger people. The operative risk is clearly the first major consideration in approaching this question. It can be assessed in this way with some degree of precision against one other factor, the risk of malignancy. But the series quoted above are small ones, and even if they were a fair sample of what happens in good American hospitals they do not necessarily apply elsewhere. We need to know whether the risk of malignancy is as high in Britain as in America, especially in those areas where gastric ulcer, relative to duodenal, is so much more common and is oftenest on the lesser curve; and the individual practitioner would wish to know the fatality-rate of gastrectomy in the hands of the surgeon or at least of the hospital of his choice. Unless he considers that rate to be well below the risk of malignancy he should hesitate to influence patients with lesser-curve ulcers in the direction of gastrectomy, at least until medical management has had every possible chance; where medical treatment has failed he has to weigh the operative risk against the risk of malignancy plus the degree of invalidity resulting from a persistent benign ulcer—a task of judgment beyond the scope of arithmetic. He must also take into account the chance that an immediately successful partial gastrectomy will not secure the patient from further gastric symptoms; this, however, is small, for in the series from the Massachusetts General Hospital it was only 4%, whereas medical treatment was unsuccessful in 12%.

Turning to duodenal ulcer, we have a simpler problem because the risk of malignant change drops out. We have general agreement that gastro-enterostomy is no longer the best treatment for uncomplicated duodenal ulcer in younger patients; this for two reasons—first that it is too often followed by recurrence of the dyspepsia, sometimes with stomal ulceration, and second that, from a better knowledge of the natural history of the disease, it is suspected that many patients who recovered good digestion after gastro-enterostomy would have done so equally well under medical management or perhaps even untreated. The indication for gastro-enterostomy in duodenal ulcer is now simple and clear; it is persisting pyloric obstruction in the presence of a low gastric acidity, and is usually found in patients over fifty. The fatality-

1. Judd, J. R. *Ann. Surg.* 1941, **114**, 840.
2. Gray, H. K., Walters, W. and Priestley, J. T. *Proc. Mayo Clin.* 1941, **16**, 721.
3. Allen, A. W. and Welsh, C. E. *Ann. Surg.* 1941, **114**, 481.

rate in the hands of the average competent surgeon is probably about 1–2%; no treatment other than surgical is of any avail. For those ulcers where surgery is sought on account of persistence of crippling dyspepsia despite medical management, or because bleeding has often occurred and recurrence is feared, or because obstructive symptoms are developing while the gastric acidity is high, the modern operation of choice is partial gastrectomy. In the Mayo Clinic this is now performed on nearly half the duodenal ulcer patients who come to operation,[3] whereas six years ago it constituted less than 10% of operations for duodenal ulcer; at the same time a larger proportion of duodenal ulcer patients are being treated medically, so that the average severity of the disease in those patients reaching the surgeon is greater, and is held to justify the more dangerous procedure. The balancing process here weighs the operative fatality plus the chance of postoperative disability on the one hand against the likelihood that medical management will not achieve tolerable health on the other. Again it is judgment, not arithmetic, which comes into play, but it is well to know the figure for the one ingredient that can be roughly measured—namely, the operative fatality. In 1936 EUSTERMAN and BALFOUR[4] said that 4·8% of patients undergoing gastric resection for duodenal ulcer in the Mayo Clinic died in hospital. In 1940 the Mayo Clinic figure was 3·9%.[2] So the practitioner who, despairing of medical treatment in Mr. Jones with his non-obstructing duodenal ulcer, calls in a surgeon, is exposing Mr. Jones to a 1 in 20 or 1 in 25 chance of dying in a few weeks. That is on the assumption that the surgeon and the hospital or nursing-home are together capable of results equal to those of the Mayo Clinic. In many cases the risk is probably much greater. So the practitioner, who has no figures before him from the surgeon or hospital of his choice, would usually be wise to assume a 5–10% fatality for this operation, and to ask himself whether the state and prospects of his patient warrant taking that risk. If in doubt, let him redouble his efforts to understand and alter the patient's way of living in such a way as to promote the healing of his ulcer.

CORNEAL DAMAGE BY MUSTARD GAS

Two remarkable facts about mustard-gas lesions of the cornea emerged from the use of this gas in 1917–18. One is the ability of the cornea to heal spontaneously without opacity or loss of substance; the other is the development of long delayed sequelæ. Spontaneous corneal healing is the most probable end-result in the vast majority of eyes of those who survive exposure to gas. According to the Medical History of the War,[5] in a follow-up of about a third of all the gassed cases among the British only ten were seen with an infiltrated ulcer in which vision was permanently impaired by opacities of the cornea, and there were only four cases of panophthalmitis requiring removal of the eye. The passage of time has modified this favourable prognosis but only by the addition of a very small percentage of patients who have since revealed the existence of a latent complication. This is the so-called delayed keratitis described by T. J. PHILLIPS,[6] who observed that men who had been exposed to mustard gas in 1917–18 were being seen from time to time for signs which were unfamiliar in ophthalmology, and who collected 70 cases at Moorfields. The total number of these patients in relation to those exposed was small; all had been exposed to very large doses of the gas; the delay in onset of symptoms varied from six to twenty years and the interval was said to be symptom-free. The association of mustard gas and of mustard gas only with these lesions was thus suspected but not proved. The existence, in the interval, of some slowly developing but symptomless process was also suspected and again lacked proof.

In order to make up for these deficiencies Miss IDA MANN and Dr. B. D. PULLINGER[7] have studied the action of the gas experimentally in rabbits and also in the few laboratory cases that this war has produced. Rabbits, whose pathological processes are speeded up in accordance with their shorter life (about 7 years) to about ten times the pace of those of man, are convenient subjects in which to trace the whole history of the lesion. The course of events depends on where the gas is applied and thus also on the total dose. Spontaneous healing without delayed sequelæ, with at the worst a faint nebula, follows invariably if the cornea alone is affected and no damage is done at the corneoscleral junction. When the corneoscleral junction, which is vascular in contrast with the rest of the cornea, is affected the end-result is variable. It depends chiefly on the dose of gas but partly also on its distribution and the damage done at the corneoscleral junction, to the conjunctiva and to the lids. It is only when a very large dose gains access to all these structures that the eye is lost early. A smaller amount may lead either to spontaneous healing after a peculiar type of vascularisation of the cornea, or, after many months, to a lesion corresponding to the human one known as delayed keratitis. This lesion has proved to be a degeneration rather than an inflammation, for after a long period of symptomless vascularisation the vessels begin to recede and as they do so deposits of cholesterin and fat appear in the substantia propria of the cornea in the region formerly occupied by vascular loops. After a time, if these deposits are near the surface, the epithelium over them is shed leaving a small shallow ulcer from the base of which the crystals have disappeared. The epithelium then heals, but new ulcers appear and the process is repeated many times over. Exactly why some of the vascular lesions end this way and others heal without this complication MANN and PULLINGER do not discuss. They imply that the severity of the lesion in one particular anatomical distribution is directly proportional to the dose. But it should be remembered that both rabbits and men have a tendency, showing individual variations, to form lipoid deposits especially in avascular sites. The intima of blood-vessels is said to be avascular in certain animals, and probably in man, and it is here that in man and rabbits individual variation is seen in respect of cholesterin and fatty deposits.

MANN and PULLINGER have dealt only with the clinical pathology and not with treatment, but some inferences can be drawn from their paper. In this as in other spontaneously healing lesions more harm

4. Eusterman, G. B. and Balfour, D. C. The Stomach and Duodenum, Philadelphia, 1936.
5. Medical History of the War, London, 1922, Surgery, vol. II, p. 531.
6. *Proc. R. Soc. Med.* 1940, **33**, 229.
7. *Ibid*, 1942, **35**, 229.

than good may be done by injudicious attempts at therapy. The results of treatment must be judged in the light of the knowledge that natural healing can take place; that almost all corneal lesions improve for a time but may then relapse; that frequent relapse, often without symptoms either in rabbits or men, is characteristic of all severe lesions; and that end-results are usually long delayed. Thus the assessment of therapeutic trials must inevitably be difficult.

MACHINE TOOLS OF MASS RADIOGRAPHY

IMPROVEMENT in the apparatus for mass radiography of the chest has been so rapid during the last five years that it is now possible to obtain screen miniatures of consistently high quality. The idea is much older than that. McINTYRE of Glasgow, within twelve months of Röntgen's great discovery, wrote [1] "the thought occurred to me that it might be useful to photograph the fluorescent screen." His experiments were brilliant, and he records his naïve surprise at finding on the miniature screen picture also a large shadow of the camera lens and brass mountings; but unstable X-ray tubes, poor fluorescent screens and coarse-grained emulsion doomed these experiments to failure. Fifteen years later [2] CALDWELL, one of the early American X-ray martyrs, worked out the basic principles of screen photography and predicted its modern applications with uncanny accuracy. He might almost have foreseen the production in Holland of the rotating anode tube, of the 'fluorazure' screen in London, of the wide aperture lens in Germany, and of fine-grain film here and in America. It now remains to make the apparatus compact and transportable. The first large-scale application was carried out by DE ABREU [3] in Brazil in 1930 and all modern apparatus is based on his ingenuity. His work was closely followed in Germany, and in 1938 mass radiography was an established item in the war preparations of the Third Reich.[4] With typical German thoroughness a miniature radiogram became an essential part of the recruit's overhaul. Examination of the whole urban population was begun but interrupted before completion by the outbreak of hostilities. The first paper [5] on the subject published in this country was by DORMER and COLLENDER of Durban, and COLLENDER has since perfected [6] an apparatus whereby the factors of time and distance are made identical with those for full-size radiography. He is the fortunate possessor of an f/0·85 lens with a focal length of 8·5 cm., and his apparatus is so arranged that exposures are made in 1/10 sec. at 5 feet. He uses two rotating anode tubes facing two upright stands. Two patients stand side by side and a smooth mechanism quickly moves the camera and tunnel from one stand to the other. COLLENDER chides us for not adopting his technique at once, but he will be pleasantly surprised when he sees the superb results now being obtained in London by Miss K. C. CLARK with less elaborate equipment and slightly different technique. The delay in the adoption of mass radiography in England has given us an opportunity to study results elsewhere. Many chest surveys have been done—some with full-size films and some with screen miniatures—by various states, tuberculosis associations, insurance companies and large-scale employers in America, in London by the Royal College of Physicians under the Prophit bequest, and elsewhere as our correspondence columns indicate. It is noteworthy that in surveys by trained radiologists on full-size films the results are more uniform than those obtained by health officers and factory medical staff with screen miniatures, where the proportion of positive diagnoses has varied between 1 and 6%. Obviously the value of this method—as indeed of any other method—depends on the skill and experience of the diagnostician. At present there is general agreement that interpretation is at least ten per cent. more accurate with full-size films, but it remains to be seen whether this discrepancy yields to standardised technique and highly trained observation. No trouble should be spared to make the screen miniature a success, for economy of time and of material are on its side.

1. McIntyre, J. *Lancet*, 1896, ii, 1303.
2. Caldwell, E. W. *Amer. Quart. Roentgenol.* 1911, **3**, 34.
3. de Abreu, M. *Fortschr. Röntgenstr.* 1938, **58**, 574.
4. Janker, R. Leuchtschirmphotographie. Leipzig, 1938.
5. Dormer, B. A. and Collender, K. G. *Lancet*, 1939, i, 1309.
6. Collender and John, H. G. *Trans. S. Afr. Inst. elect. Engrs.* Nov. 10, 1941.

Annotations

ANÆSTHESIA DURING CHEMOTHERAPY

IT seems that in prescribing sulphonamides for patients destined for the operating table we have unwittingly been killing two birds with one stone—recent research suggests that sulphonamides may also act as basal hypnotics. Adriani,[1] working with mice, found that the daily injection of sulphanilamide made the animals more susceptible to the anæsthetising action of barbiturates, and under the influence of sulphanilamide the minimal lethal dose of the barbiturates was also less. When chloroform, ether, nitrous oxide, cyclopropane or tribromethanol were used as the anæsthetics, however, he found no difference between the behaviour of control rats and those receiving sulphanilamide. Butler and his colleagues [2] have re-examined this subject in greater detail, and they do not accept all of Adriani's conclusions after making a statistical analysis of his published data. In Butler's experiments the sulphonamides were fed to male white mice on a basal diet of purina; special care was taken over randomisation of the animals used in the control and sulphonamide groups; and absorption of the drug was checked by blood-sulphonamide estimations. The anæsthetics selected for investigation were chloroform, ether and pentobarbital, representing types widely different in chemical constitution and pharmacological action. Statistical examination of their results showed that feeding of sulphanilamide, sulphapyridine, sulphathiazole, sulphadiazine, or N4-acetylsulphanilamide to mice for 2½ days caused them to be anæsthetised by smaller amounts of pentobarbital than were normal mice. The median lethal dose of pentobarbital was also reduced by about the same absolute amount as the median anæsthetic dose; in other words, the previous administration of a sulphonamide had the same effect as an extra dose of the anæsthetic itself, and the safety margin was practically unchanged. Results of the same kind were obtained with ether and chloroform. Thus, contrary to Adriani's conclusions, the effect is not confined to the barbituric-acid series of anæsthetics. Twenty-four hours after withdrawing sulphonamide medication the basal hypnotic action had partly disappeared. A blood-sulphanilamide of 6 mg. per 100 c.cm. reduces the effective anæsthetic dose by 28%. The mechanism of the interaction between the sulphonamides

1. Adriani, J. *J. Lab. clin. Med.* 1939, **24**, 1066.
2. Butler, T. C., Dickison, H. L., Govier, W. M., Greer, C. M. and Lawson, P. D. *J. Pharmacol.* 1941, **72**, 298.

and anæsthetics has not yet been explained. Intensive sulphonamide therapy, often causes drowsiness and mental depression, but Butler and his co-workers show that sulphanilamide alone does not produce anæsthesia even when the concentration in the blood is as high as 24 mg. per 100 c.cm. Another interesting observation is that even when the drug is administered intravenously some delay occurs before the basal hypnotic effect becomes apparent. This suggests that a comparatively slow chemical change is a necessary preliminary to the onset of this curious pharmacological action, and Butler mentions the possibility that the mechanism may include the inhibiting in the tissues of an enzyme system. The probability of sulphonamides being used as basal anæsthetics can be dismissed as negligible. Again, the induction of anæsthesia by means of volatile and non-volatile drugs is achieved by gradually increasing dosage, and the anæsthetist is guided by the reaction of the individual patient rather than by noting the amount of the anæsthetic that has been given. Undoubtedly it is desirable that the anæsthetist should be aware that his patient has been receiving sulphonamides, and he may expect to use rather less anæsthetic than he would otherwise have required, but this is not likely to be of great practical importance. Some adjustment of dosage might, however, have to be made where a measured quantity of anæsthetic is given, as with 'Avertin.' Perhaps the main interest of the apparent interaction of the sulphonamides and the barbiturates lies in its opening up a new field for the investigation of the mode of action of sulphonamides in the tissues. Another series of experiments on laboratory animals might be undertaken to determine whether the curative action of the sulphonamides in various infections is influenced by the simultaneous administration of barbiturates and related compounds.

CARDIAC ARREST ON THE OPERATING TABLE

MODERN anæsthetic methods may have reduced but certainly have not abolished the incidence of cardiac arrest, and in this emergency the tendency is to rely less on so-called cardiac tonics and more on certain general measures. These measures are summarised by Adams and Hand[1] in discussing a remarkable case in which during lobectomy for bronchiectasis the heart stopped for 20 minutes, the patient ultimately making a complete recovery. As they point out, stoppage is usually due to one or more of three factors—idiosyncrasy to the anæsthetic, ventricular fibrillation or a vasovagal reflex. In their case, in which cyclopropane was the anæsthetic, the cardiac asystole occurred 2 hours after the beginning of anæsthesia and was probably a vasovagal reflex effect. They make the following recommendations. Prophylaxis consists in reducing vagal excitability to a minimum, and blocking the afferent and efferent pathways of the vagus. The first is attained by ensuring adequate oxygenation, particularly of the medullary centres, since depression of these by narcotics enhances the excitability of the vagus. The second entails adequate local anæsthesia, especially if any local manipulation such as aspiration of the trachea is to be carried out, and giving atropine sulphate preoperatively in sufficient dosage (gr. 1/75) as well as during the operation if it is a long one. If the heart stops treatment may be summarised under the two headings of artificial respiration and artificial circulation. Respiration is maintained by an endotracheal tube, preferably with a balloon cuff attachment which ensures a closed system. Carbon-dioxide absorption is essential, and adequate pulmonary ventilation is obtained by rhythmic pressure of 12–16 mm. Hg at 28–32 per min. on the rebreathing bag. The circulation is kept going by rhythmic manual compression of the heart, synchronised with the artificial respiration, for which accessibility of the heart is necessary. This is easily managed in operations on the chest or abdomen, and in operations elsewhere it is recommended that the heart should be rapidly exposed by an intercostal incision in the anterolateral aspect of the chest, cutting the costal cartilages above and below the incision. Cerebral circulation is assisted by having the patient in the partial Trendelenburg position. Cardiac stimulants, such as adrenaline, are considered merely incidental to the rest of the treatment. These recommendations have the merit of being based on sound physiological principles, the first of which is that if recovery is to be complete the cerebral tissues must be kept well oxygenated.

1. Adams, H. D. and Hand, L. V. *J. Amer. med. Ass.* 1942, **118**, 133.

REMOVAL OF URETERIC CALCULI BY TRACTION

MANY instruments have been devised for removing ureteric calculi by intracystoscopic methods, but they are all either inefficient or dangerous. It is impossible to grasp a stone impacted in the ureter without at the same time running the risk of grasping the ureteral mucosa. Even if this is avoided dragging the stone through the lower portion of the ureter is likely to bring with it a portion of mucous membrane, an accident which may result in a stricture. For this reason many urologists have discarded all such methods except that of passing a ureteric catheter beyond the stone, leaving the catheter for a time in position, and then removing it after injecting some lubricant into the ureter. Finney,[1] of South Carolina, describes an ingenious way of removing small stones impacted in the lower end of the ureter which is apparently free from danger and was successful in all but one out of fifty cases. A number 6 X-ray catheter is modified by inserting a silk suture in the distal end, care being taken to tie the knot as small as possible. With a wire stylet in position, the catheter with its thread is passed beyond the calculus up to the renal pelvis. When this has been reached the stylet is removed and a loop of catheter formed by pushing it further onwards and at the same time pulling on the thread. The loop is then brought down the ureter until it engages the calculus. There is no doubt when this occurs, for firm resistance is encountered. The cystoscope is then removed and the patient returned to bed. A small scale is attached to the ends of the doubled catheter and the nurse is instructed to exert a pull of two pounds on the scale every hour or two for 24 hours, maintaining traction only for a short while. At the end of that time the patient is given a short anæsthetic and a pull of five pounds is exerted by the urologist himself. There was no accident or severe reaction in the fifty cases so treated and all but three proved successful at the end of 24 hours. Treatment was continued in the three refractory cases, two being successful in 34 and 42 hours respectively. The third case was treated by the open operation at the end of 72 hours. It is doubtful whether any other method of manipulative treatment has given such excellent results.

POSTERIOR PITUITARY GLAND AND THE STOMACH

EIGHT years ago Dodds and his colleagues[2] demonstrated the production of severe gastric lesions in animals injected with large doses of vasopressin. Subsequent experiments[3] showed that vasopressin acted through its vasoconstrictor properties—if small doses of vasopressin were injected the increase in blood-flow that was a necessary concomitant of gastric secretion was prevented, and the secretion was inhibited; if larger doses were given, the gastric ischæmia was more severe and the acid contents of the stomach then acted on the stomach wall to produce the lesion, only that area

1. Finney, R. P. *J. Amer. med. Ass.* 1941, **117**, 2129.
2. Dodds, E. C., Noble, R. L. and Smith, E. R. *Lancet*, 1934, ii, 918.
3. Cutting, W. C., Dodds, Noble and Williams, P. C. *Proc. roy. Soc.* B, 1937, **123**, 27, 39, 49.

of the wall containing the oxyntic cells being affected. Such experiments showed that blood-supply was an important factor in the regulation of gastric function, but did not indicate that vasopressin necessarily played any part in regulating that function in the normal body. The only evidence that vasopressin played a physiological rôle was that the gastric secretion and the responses of the gastric blood-flow to secretory stimuli were abnormal in hypophysectomised cats, except in one which had apparently normally functioning posterior pituitary tissue still present. Vasopressin injections in rabbits also caused a profound macrocytic anæmia,[4] though the cause of this is still debatable. These findings as a whole caused little stir in physiological circles and it remained for the clinicians to provide supporting evidence. Thus Jones[5] in 1938 described a patient who had a hypochromic anæmia, hypertension, decreased glucose tolerance and achlorhydria. He suggested that this was a case of hyperfunction of the posterior lobe of the pituitary, and workers in Dodds's laboratories[6] were able to demonstrate large amounts of pressor and antidiuretic activity in the patient's urine. As the patient's symptoms disappeared so did the pressor and antidiuretic activity of his urine. More recently, Keith Simpson[7] reported a case in which a severe gastric lesion followed fracture of the base of the skull. At autopsy, done 44 hours after the accident which caused the fracture, it was found that there was laceration and hæmorrhage of the pituitary stalk and of the tuber immediately over the gland. There was also hæmorrhagic necrosis of the stomach, which was confined to the oxyntic cell-bearing area and was unrelated to any local injury. The lesions are strikingly similar to those produced in experimental animals by vasopressin, and both Dodds and Keith Simpson regard the lesions as identical. It seems reasonable to suppose that they are caused by the same means. Simpson also reported the case of a boy who suddenly developed hæmatemesis three days after fracture of the base of the skull; he died 5 weeks later, and the stomach was then normal. These clinical findings certainly support the experimental suggestion that there is some physiological relation between the functions of the posterior pituitary gland and of the stomach. If clinicians bear the possibility in mind more cases illustrating the relation may be found.

THE EYE AS A CAUSE OF GENERAL DISTURBANCES

THE eye is a specialised part of the nervous system and is not structurally more prone to pathological changes than the rest of that system; nor is ocular disease more likely to have general repercussions than disease of other tissues. A better case can be made for the tonsils, sinuses and teeth, for infection of these often affects the general health, while ocular infection has no such consequences. Apart from melanoma of the uveal tract, rare primary tuberculous infection of the eye, and such curiosities, it is difficult to think of an eye disease with systemic complications; though some ocular lesions are complications, or rather aspects, of general disease.

Disturbances of vision—of mechanism not structure—may, however, influence well-being. The eye is not only a specialised nervous tissue receiving and translating stimuli that reach it but also a compact mechanical device concerned with the collection of such stimuli. Moreover, the two eyes act as a single organ, so that their coördination presents problems of its own. Ophthalmology, the most precise of clinical studies, was the first to postulate that the functional activities of organs have pathological aspects as well as physiological limits. Long before functional disturbances of the alimentary and circulatory systems were recognised the conception of asthenopia had been reached. Mackenzie,[1] who introduced the term in 1843, regarded the symptoms as due to retinal exhaustion, which made it necessary for the patient to give up all work and take long sea-voyages; in the succeeding forty years the rôle of accommodation, refractive errors, and imbalance of the extraocular muscles came to be clearly appreciated. But many promising beginnings run to extremes. As soon as Donders's[2] work became translated into feasible clinical terms by Cuignet's introduction of retinoscopy into ophthalmic practice, an army of uncritical observers welcomed the correction of refractive errors as a panacea. Even at the beginning of the twentieth century the correction of refractive errors was being advocated as a cure for epilepsy. Gould,[3] in six enthusiastic volumes, left few historical disasters or misfortunes unexplained—they all arose from uncorrected refractive errors among the great. Accepted observations on the significance of moderate degrees of hypermetropia and of presbyopia as a cause of headache were the forerunners of a belief that small errors were just as significant or even more so. Theoretical and practical difficulties that did not fit in with this uncritical opinion were—and sometimes still are—ignored. The correction of small refractive errors implies an accepted standard of normality; this was supplied by the conception of emmetropia, but the fine methods of retinoscopy showed that ideal emmetropia is decidedly exceptional. The correction of small errors also introduced the personal factor—patient and observer often gave different readings of the error to be corrected. Particular attention was paid to small degrees of astigmatism. The relief of symptoms had to be explained on the dubious hypothesis that the ciliary muscle (in violation of the all-or-none law of muscular contraction) contracted in one meridian so as to counteract the astigmatic error; in fact the ciliary muscle was almost endowed with intelligent behaviour. Yet the fact remained that such errors could often be found in patients without symptoms. Today the correction of hypermetropia of medium degree for the relief of headache is an accepted fact, and the reaction against the correction of refractive errors has perhaps gone too far.

Anomalies in muscle-balance have an almost parallel history. The use of complicated mechanical tests for motor imbalance overlooked the fact that muscle activity is a dynamic process, and that instruments such as Stevens's phorometer might introduce defects in muscle action which were not necessarily present clinically. The occlusion method advocated by Marlow[4] also appears to give artificial results. The use of prisms for the correction of muscle-imbalance is today far less widespread than it was in the past. A more interesting phase has developed of late years with recognition of the plastic nature of muscle activity. This is the basis of orthoptic practice which aims at treating anomalies of muscle action, and is distinct from fusion training in squint, which has psychological implications. Stutterheim,[5] in 1931, noted that artificial diplopia induced by prisms placed base out in front of the eyes could be overcome involuntarily up to a certain point, and to a much greater extent by voluntary effort. In stimulating and developing this voluntary capacity means have been found to overcome symptoms of asthenopia in patients who do not respond to other methods of treatment. Convergence is phylogenetically a recent acquirement and is thus particularly prone to disturbances of function. The case for treatment based on these principles is

4. Dodds and Noble, *Nature, Lond.* 1935, **135**, 788.
5. Jones, E. I. *Lancet*, 1938, i, 13; *Proc. R. Soc. Med.* 1940, **33**, 503.
6. Noble, Rinderknecht, H. and Williams, *Lancet*, 1938, i, 15.
7. *Guy's Hosp. Rep.* 1940–41, **90**, 21.

1. Mackenzie, W. *Ann. Oculist, Paris*, 1843, **10**, 97.
2. Donders, F. C. On the Anomalies of Accommodation and Refraction of the Eye, London, 1864.
3. Gould, G. M. Biographic Clinics, London, 1903–07.
4. Marlow, F. W. The Relative Position of Rest of the Eyes and the Prolonged Occlusion Test, Philadelphia, 1924.
5. Stutterheim, N. A. *Brit. J. Ophthal.* 1931, Suppl, 5, p. 5.

strengthened by the experiences of Williamson-Noble[6] who in a series of 117 patients obtained satisfactory results in 89. He has also drawn attention to the use of lenses to overcome aniseikonia or inequality in the refractive state of the two eyes. In the elaboration of these newer methods, greater critical faculty is being shown both in the making and the interpretation of observations than was the case with the pioneers of refractive error correction. The psychological make-up of the patient must, of course, be taken into account and indeed is unlikely these days to escape attention; but this is less a reason for an attitude of cynical nihilism towards the method than for tempering enthusiasm with caution.

INTRAVENOUS GUM

THE diuretic action of the intravenous injection of 6% gum acacia solution (or indeed any other solution exerting a suitable colloid osmotic pressure) in cases of nephrotic œdema has been ascribed to its attracting water from the œdematous tissues. Goudsmit and his associates[7] cast doubts on this theory. They find that although intravenous gum does produce diuresis accompanied by a greatly increased excretion of chlorides in these cases, yet the colloid osmotic pressure of the serum and the plasma volume do not undergo any great change. Unfortunately there is a discrepancy between their figures for the colloid osmotic pressure of the plasma and the values calculated from the serum protein concentration. For example, one of their patients had a serum-protein concentration of 4·1 g. per 100 c.cm. and an albumin: globulin ratio of 1:1·1. This gives concentrations of 1·9% for albumin and 2·1% for globulin, and colloid osmotic pressures respectively of 142·5 and 42 mm. of water. But their figure for the total colloid osmotic pressure of the serum was 88 mm. of water against the calculated total of 184·5 mm. In a later paper,[8] however, they point out that there is an increase in plasma volume averaging 28% after intravenous acacia injection and that this is accompanied by a reduction in hæmoglobin and serum-protein percentage due to simple dilution. They also give more figures for the serum osmotic pressures and show that a difference of 1% in protein and acacia concentration leads to a difference of 60 mm. and 48 mm. respectively in the osmotic pressure. The fact that total colloid osmotic pressure sometimes falls after intravenous acacia seems to be accounted for by the dilution of the serum proteins from the increased plasma volume consequent on this fluid entering the circulation. The exact mechanism of the diuresis which results remains to be determined, but it is still a possibility that diuresis is initiated by the increased blood-volume, any reduction of which by loss of fluid via the kidneys increasing the serum osmotic pressure and this in its turn attracting more fluid from the œdematous tissues—a sort of benign cycle which would only stop when no more œdema fluid remained.

RESEARCH IN INDUSTRIAL MEDICINE

Prof. A. W. M. ELLIS, M.D., F.R.C.P., has been appointed by the Medical Research Council to a whole-time position on its scientific staff as director of research in industrial medicine. Professor Ellis has been director of the medical unit at the London Hospital, holding a chair of medicine in the University of London. We have published recently the results of his prolonged investigation of Bright's disease carried on with Dr. Horace Evans and Dr. Clifford Wilson. The investigations to which he will now apply himself will be directed to the problems of industrial toxicology which are of special importance during the war.

6. Williamson-Noble, F. A. *Ibid*, 1941, **28**, 399.
7. Goudsmit, A. and Binger, M. W. *Arch. intern. Med.* 1940, **66**, 1252; Goudsmit, Binger and Keith, N. M. *Ibid*, 1941, **68**, 513.
8. Goudsmit, Binger and Power, M. H. *Ibid*, 1941, **68**, 701.

TRAUMA AND LEUKÆMIA

THIERSCH[1] has raised again the question of whether trauma plays any part in the ætiology of leukæmia. His patient, a man of 51, received injuries to the head and left arm, shoulder and hip in a motor-car accident; there were no fractures, but he was unconscious for 8 days. When he recovered he noticed some enlarged lymph-glands in the left axilla and groin; unfortunately little attention was paid to them and it was not until 5 months after the accident that a blood-count was made and revealed a lymphatic leukæmia. Subsequently typical anæmia and enlargement of spleen and lymph-glands appeared. This patient was reasonably entitled to compensation for the disability caused by the accident, but was he entitled to compensation for the disability and probable shortening of life entailed by the lymphatic leukæmia? This is a question of topical interest; some members of the Forces are going to develop leukæmia anyhow, and they are abnormally exposed to trauma; can the leukæmia be put down to conditions of service? In 1930 Lewsen[2] described a case and reviewed the literature; he found 40 cases with sufficient evidence to justify consideration. Among other points he noted that the injury was most often to the long bones, ribs and spleen, but in some there was just a general shaking; the leukæmia appeared at periods from a few days to 4 years after the injury, and all the cases—with one doubtful exception—had myeloid leukæmia. This limitation to myeloid leukæmia was interesting, because the obvious reply to the case in favour of trauma causing leukæmia is that it is just a coincidence, especially since the incidence of leukæmia among the injured is not significantly different from that among the general population. But if myeloid leukæmia were produced every time, a case might be made for unusual stimulation of or injury followed by repair in the marrow leading to a leukæmic state, much as a case has been put forward for the initiation of bone sarcoma by injury. Thiersch's patient, however, had lymphatic leukæmia and so had a patient reported on by Norikoff[3]; this point therefore fails to convince. The problem is similar to the argument that has gone on about the possible traumatic origin of tumours. Ewing[4] says that six criteria must be satisfied if a case is to be made out at all: (1) authenticity and adequacy of the tumour, (2) previous integrity of the wounded part, (3) a reasonable time relation (3 weeks to 3 years), (4) continuity of symptoms of the injury with those of the tumour, (5) microscopical or other proof of the existence and histological type of a tumour, and (6) location of the tumour at the point of injury. Thiersch's case satisfies points 1, 2, 4 and 5, but with regard to 6 there is no special evidence of injury to the lymphoid tissue except that scattered about the well-protected bone-marrow, and with regard to 3 swelling of lymph-glands was noticed 8 *days* after the injury. If trauma were a cause of leukæmia we should be expecting an increased incidence under present conditions; it has not so far appeared and there is no evidence that it did in 1914–18. The relation of trauma to tumour formation is complex, but, as Ewing points out, the striking fact is the comparison between the ability of specific agents and the failure of simple trauma to produce malignant tumours in normal tissues. Even if a case can be established for traumatic tumours, the evidence cannot be lightly applied to leukæmia, in man at any rate, for though everyone recognises that trauma has "neoplastic tendencies" any further definition is arguable. Lewsen's case failed to convince the courts, and until more definite evidence is available "not proven" must be our verdict too.

1. Thiersch, J. B. *Med. J. Aust.* 1941, ii, 504.
2. Lewsen, S. C. *Lancet*, 1930, i, 288.
3. Norikoff, A. S. Quoted by Forkner, C. E. Leukæmia and Allied Disorders. New York. 1938.
4. Ewing, J. Neoplastic Diseases. Philadelphia. 1940.

Special Articles

MEDICINE AND THE LAW
A Chapter of Accidents

A CURIOUS story was told in the House of Commons on Feb. 18. A former miner named Grossett, 45 years of age, had six accidents between 1929 and 1938. The cartilage of his right knee was removed in 1929; a muscle of his heart was strained and one of his hands was poisoned in 1930. In 1931 he broke a leg, and in 1935, after four years' freedom from injury, he broke his collar-bone and a rib. Another three years of immunity followed; then in 1938 he strained his back and in 1939 he broke a leg again. He is said to have received at this point the written intimation which some firms send to workers whose history shows such a proneness to disability, warning him that the colliery would feel unable to employ him further if he had another accident. In July, 1941, he registered under the appropriate coal-mining order of the Ministry of Labour and National Service; he duly recorded the fact that he had worked as a stripper in coal mines but declared himself unwilling to go back to the pits. The Ministry caused him to be medically examined in August, 1941, by Dr. X, who certified him fit for underground employment in mining. In the following month he was ordered by the national service officer to take up work as a stripper and machine-man at one of the collieries of the Fife Coal Co. He appealed, as he was entitled to do, to the local appeal tribunal, producing medical certificates from two doctors that he was unfit for work underground; the general secretary of the Fife Miners' Union gave similar evidence. The appeal tribunal seems to have accepted the single opinion of Dr. X against the medical and other evidence called on behalf of Grossett; the direction that he should go to work at the colliery was upheld. On his refusal, he had to appear before the sheriff court (which in Scotland has a criminal jurisdiction roughly corresponding to that of the justices at petty or quarter sessions in England) for his disobedience to the law. The sheriff sentenced him to 14 days' imprisonment. It was apparently inherent in the proceedings that the sheriff could not re-hear the case on the merits but had merely to decide whether Grossett had disobeyed the order and, if so, to impose such penalty as he might deem fit.

The Lord Advocate, responsible for the administration of justice in Scotland, made the Government's reply. He had felt obliged to direct that Grossett be prosecuted. Defence Regulation 58B authorises the Ministry of Labour and National Service "or any national service officer" to direct any person to perform such services as may be specified in the direction, "being service which, in the opinion of the Minister or officer, he is capable of performing." Miners were wanted in the pits: this man was registered as an ex-stripper; after leaving the pit, he had been working (in September, 1940) as a foreman on a concrete shuttering plant on the Rosyth housing scheme. This work might not be comparable with work at the coal face underground, but at least there had been reasonable inquiry into the medical side of the case. The minister or his officer is not obliged to consult a doctor, but Dr. X had been consulted and had declared the man fit. The safeguard of appeal, under the National Service regulations, had been applied. The local appeal tribunal of three members (two of them possessing technical qualifications) had examined the evidence and had unanimously decided that Grossett was fit for this work which he had been directed to undertake. The national service officer had reissued his direction according to the tribunal's recommendation. Moreover on Jan. 27 last Grossett did in fact go to work, as directed, at the coal face. While (as the Lord Advocate conceded) it was too early yet to say whether his health would be affected or whether he would be able to remain at full work as a miner for the duration of the war, he is, so far as is known, still working in that capacity.

Mr. Gallacher, M.P., who had brought the matter up in the debate on the adjournment, declared himself dissatisfied with the Lord Advocate's reply and announced that he would take the matter further with the Minister of Labour. Perhaps the most disturbing element in the case had been his statements (privileged when made in Parliament) that Dr. X, whom Mr. Gallacher's informants admitted to be a practitioner of considerable standing, was not regarded by Fife miners as impartial; he had, it was said, on other occasions given certificates or otherwise passed men as fit for work where there was strong medical opinion to the contrary. This feeling on the part of the workers that a particular doctor is not fair to them is, of course, not unfamiliar in workmen's compensation cases, particularly where the doctor is one who habitually advises on the opposite side. The debate also raised the general question whether the lay tribunal should not be replaced by some kind of medical referee or medical board whose opinion would be final. The Lord Advocate was naturally not concerned to defend the terms of the law for which the Minister of Labour and National Service is responsible; he was meeting the criticism that the sheriff had somehow failed in the judicial duty to be fair. This task he succeeded in discharging. If the circumstances of the case indicate that the "control of employment" orders do not always work smoothly, it is at least satisfactory that in this country a grievance against the executive can be promptly ventilated in the legislature, and an answer obtained, even in the midst of a total war.

CROSS-INFECTION IN WARDS

A DISCUSSION at the Epidemiology section of the Royal Society of Medicine on Feb. 27 was opened by Dr. ROBERT CRUICKSHANK, who defined cross-infection as infection of a patient in hospital with the causal agent of a disease other than that for which he was admitted. This definition enlarges the original conception of cross-infection to include both manifest and latent infection. In addition, cases may be cross-infected with other biological types of the organism responsible for the primary infection—e.g., in streptococcal, pneumococcal and diphtheritic infections. The problem concerned not only infectious diseases hospitals, but also children's wards, maternity units, infant and day nurseries, ear, nose and throat wards, and, in war-time, general surgical units. Examples illustrating the extent of the problem were a streptococcal cross-infection rate of over 50% in a measles ward, with two-thirds of the cases clinically and the others latently affected (Allison), more than 60% of the clinical complications in scarlet fever due to cross-infection and an average stay in hospital of 52 days for the complicated case compared with 27 days for the uncomplicated (De Waal), 14 outbreaks of streptococcal infection in four ENT wards during 3½ years (Okell and Elliott), and 13% of 551 children cross-infected with the streptococcus during one year's admissions to a children's department (J. Wright). Undoubtedly the streptococcus was the arch-enemy but staphylococcal infections in infant nurseries, outbreaks of neonatal diarrhœa and of diarrhœa and vomiting among older infants, and cross-infection with the diphtheria bacillus in diphtheria, scarlet fever and measles wards were all too frequent occurrences calling for more enlightened handling. Dr. Cruickshank divided cross-infection into three categories—respiratory or inhalation, intestinal or ingestion, and contact or implantation—and discussed the reservoirs and channels of spread of each. He thought more attention must be given to the air as the vehicle for the spread of respiratory infections; terms such as "direct contact," "air-borne" and "droplet" infection needed to be more clearly defined. He wondered if the rôle of the symptomless streptococcal throat carrier in spreading infection was not over-emphasised. For the control of cross-infection, the reservoirs must be attacked and the channels blocked. Sulphonamides were proving a useful new ally and local sprays might be used more for the streptococcal throat. Patients should be encouraged to cover their coughs and sneezes with handkerchiefs, masks should be more freely worn by nurses, and convalescent patients must not be allowed contact with ill patients. Infected dust was a major problem in wards housing streptococcal and diphtheritic patients and until its dissemination was prevented—e.g., by oiling bed-linen and floors—the relative importance of other channels in the spread of respiratory infection could not be ascertained. Search for carriers with the desoxycholate-citrate medium had proved valuable in the control of outbreaks of Flexner and Sonne dysentery.

He was certain much more could be accomplished in the prevention of cross-infection by care in the admission of patients, a full use of up-to-date laboratory methods, control of infected dust, revision of ward-regulations, and instruction of nursing staff so as to gain their intelligent coöperation in the maintenance of aseptic nursing and good ward discipline.

Dr. R. H. DOBBS, in discussing cross-infection in children's hospitals, said the objective must be to keep beds free at a time when pressure on them was greatest, and that was in the winter months when infection and epidemics were most common. To attain this objective, admission of infection to the open ward must be kept as low as possible and infection when it occurred must be prevented from spreading. Ward closure and disinfection were wasteful and usually unnecessary. The solution was threefold: (1) satisfactory hospital design with admission cubicles, small ward units and adequate isolation accommodation; (2) a high standard of medical and nursing skill and alertness to detect infection among new admissions and in the ward before irretrievable damage was done; and (3) utilisation of certain immunological principles whereby immunes and non-immunes could be readily detected, and prompt measures taken to protect the susceptible children. These included isolation of suspected or manifest infection, bacteriological search for carriers, passive and/or active immunisation against measles, diphtheria and scarlet fever, redistribution of immunes and non-immunes and immobilisation of cases in the ward, and a sharp lookout for early cases of secondary infection. If the streptococcus was now the most common cause of secondary infection in a children's hospital, gastro-enteritis was still the most fatal. Dr. Dobbs thought that visitors, if epidemiologically indefensible, were often curatively beneficial.

Dr. N. D. BEGG dealt more specifically with the control of gastro-enteritis and streptococcal infection in infectious diseases hospitals. The control of non-specific gastro-enteritis was still a major problem in wards with a fair proportion of infants. At the LCC Eastern hospital cases admitted with enteritis are nursed in completely separate cells, feeds are prepared in a special milk-room and the full aseptic technique of an isolation block is used. In two years, among 390 admissions including 57 severely ill cases, there were only 3 instances of secondary infection. Dr. Begg stressed the value of breast-feeding and the inadvisability of admitting mild cases of enteritis. Cross-infection with the streptococcus was not only responsible for many of the complications of scarlet fever but was also the cause of most of the late septic complications in measles and diphtheria. In diphtheria secondary streptococcal infection could be largely prevented by a careful clinical and bacteriological control of new admissions. In measles such a control is usually not practicable but isolation of septic infections—e.g., otitis media—as soon as they occur is a useful measure. Separation of convalescent cases in special wards or hospitals had not been very successful but more careful clinical selection accompanied by bacteriological control might yield better results. After discussing the rôle of staff carriers and the merits of bed-isolation, Dr. Begg dealt with the evidence—still mostly circumstantial—for the spread of streptococcal infection through the air by dust or droplet nuclei, and the methods that may be used for their control. He thought there was a danger of over-emphasising "bacteriological" cross-infection.

Mr. WYLLIE MCKISSOCK described his experience of wound cross-infection and its control in a neurosurgical unit. In 15 months there had been 14 cases of cross-infection, representing 4·2% of the total admissions: 3 of these cases died, 8 others had clinical infections necessitating a long stay in hospital and only 3 were latently infected. During the past 11 months when a new dressing technique (see *Brit. med. J.* 1941, ii, 375) had been in force, the cross-infection rate was 0·8% compared with a rate of 15·4% in the 4 months prior to its introduction. Mr. McKissock paid tribute to his bacteriological colleagues for their help in discovering and preventing this wound cross-infection, and suggested that a similar technique would minimise the occurrence of cross-infection in ENT wards.

In the subsequent discussion the PRESIDENT (Dr. E. H. R. HARRIES) thought that aseptic nursing had to be "rationalised" to meet the needs of diseases of varying infectivity. Dr. PHILIP EVANS described his experience with intestinal infections in a children's EMS hospital and stressed the susceptibility of the infant, the rôle of the convalescent dysentery carrier, and the importance of respiratory infection as an ætiological factor in non-specific enteritis. Dr. EDMUND NOBEL mentioned the difficulties in preventing the spread of chicken-pox and measles even in an isolation block but emphasised the value of small glass cubicles as first used in Pirquet's clinic for nursing infants. Dr. R. A. O'BRIEN thought the ideal mask had yet to be devised, and Dr. V. D. ALLISON suggested the use of a polyvalent streptococcal vaccine for the protection of probationer nurses in fever hospitals.

A SYMPOSIUM ON CHEST WOUNDS

THE staff of the chest centre, Merseyside Group, met on Feb. 12 at the Liverpool Medical Institute to read and discuss the last of a series of short papers (see *Lancet*, Jan. 31, p. 148 and Feb. 14, p. 216) on war wounds of the chest.

UNINFECTED HÆMOTHORAX

Mr. H. MORRISTON DAVIES, director of the centre, said that hæmothorax may complicate any chest injury, and occurs in varying degree in 70% of chest injuries in warfare. In non-penetrating injuries it is usually the result of a splintered rib tearing the lung or an intercostal artery. Whenever there is tear of the lung air may be found with the blood in the cavity. Injuries which result in a hæmothorax may be fatal because of shock or associated damage to other organs, but hæmothorax itself causes death for three specific reasons: loss of blood; compression of the lungs and main vessels; or sepsis supervening later. The capacity of the pleural cavity is 5000–6000 c.cm., but the loss of 1700 c.cm. of blood into the cavity is sufficient to cause unconsciousness and death. This may happen when an intercostal artery is torn and there is direct communication with the pleural cavity; injury to the hilum vessels or vena cava, he said, are too immediately fatal for surgical aid. Bleeding from the lung parenchyma is rarely fatal per se, because the pulmonary circulatory pressure is lower than that of the systemic circulation, and as the lung collapses the wound in it tends to become closed. If, however, there is an added tear in a bronchus, and especially a valvular one, death may result from compression. He emphasised the importance of taking repeated pulse-rate and pressure readings and of noting alterations in the position of the apex-beat. Bleeding may recur after a patient has been moved, as a result of further injury by rib splinter; and a rise of blood-pressure after anti-shock treatment may start a bleeding point oozing again.

After 24 hours a hæmothorax often becomes complicated by effusion provoked by irritation of the mesothelium. This will lead to more rapid compression of the lungs and large vessels and unless relieved will cause death. Moreover, under tension such an effusion can cause a morning and evening rise of temperature accompanied by few constitutional symptoms. The temperature drops on relief of tension. In the absence of sepsis blood rarely clots in the pleural cavity; but the deposit of fibrin, blood and endothelial cells gradually becomes organised and encases the lungs, as can be seen on thoracoscopy.

Treatment, he said, must aim at saving life and restoring function to as near normal as possible. After anti-shock treatment, the surgeon must diagnose the source of the blood and assess the size of the hæmothorax and the extent of the associated injuries. If the bleeding is from an intercostal artery, treatment is urgent but should be limited to what is necessary to stop bleeding. Six measures are essential: blood-transfusion; relief of intrapleural pressure (no attempt being made to wash out the blood); excision of the wound and of rib splinters; ligature of the bleeding artery; insufflation with sulphanilamide powder; and suture in one layer. Not until the patient has recovered from the loss of blood should the complete irrigation toilet—as for a pulmonary hæmothorax—be done. A hæmothorax which is not endangering life by its size should be completely washed out with saline 24–48 hours after onset, the saline then being replaced by air. During this process the intrapleural pressure must be kept at a minimum negative level; a high negative may start bleeding

again, with further injury to the already damaged lung. A compression hæmothorax with effusion or air must be relieved by aspiration and replacement as and when necessary. Three factors interfere with re-expansion of the lung: pneumonitis and subsequent interstitial fibrosis; deposits on the pleural membranes and organisation; and recurring (and untreated) effusions. Remedial exercises are valuable.

INFECTED HÆMOTHORAX

Mr. J. HOWELL HUGHES said that infection of hæmothorax influences the mortality-rate of wounds of the chest, the period of illness and the chances of restoring complete health. The origin of the infection may be: from the lung itself, the lung tissue being devitalised by damage from a foreign body or hæmorrhage; from the chest wall where excision of infected wounds has been too late or inadequate; from foreign bodies; from the blood-stream, as part of a generalised infection; or the result of carelessness with regard to asepsis during treatment. The organisms may be staphylococci, streptococci, pneumococci or rarely anaerobic organisms. Infection may supervene in a matter of hours or may be late—two or three weeks after primary trauma—but early diagnosis, he said, is of the utmost importance. The clinical picture is by no means diagnostic, since the temperature may rise for 3–4 days with a simple hæmothorax; a rise in the pulse-rate is suspicious, and so is a leucocytosis; but the only positive method of arriving at a diagnosis is by aspiration of the pleural fluid, which when infected is often purplish and has an unpleasant or even offensive odour; micro-organisms are found in the direct smear. Treatment must be begun as soon as the presence of infection is established, and consists of evacuation of the fluid. This is best done by repeated aspiration; the risk of infection of the chest wall can be lessened by cutting down to an intercostal space and packing the small wound with flavine gauze so as to get a track lined with granulation tissue along which the needle may be passed for each aspiration. Continuous suction drainage through a so-called airtight tube, though theoretically ideal, is to be avoided; in practice there is usually an air leak into the pleural cavity which produces a total empyema. Closing the skin tight around the tube is to be condemned because of the danger that superficial tissues will become infected. His experiences of pleural lavage have been disappointing, and he finds there is a danger of fatal complications if a bronchopleural fistula develops. Once the pus has become thick, open drainage should be instituted by resection of a rib, the site of resection depending on the position of the cavity. A drainage-tube can be inserted or a portion of two or three ribs can be removed and the cavity packed with gauze impregnated with eusol or azochloramid. Suction through the tube does not appear to have much effect on the rate of closure of the cavity. Exercises of the McMahon type, however, are of great value, he finds, and should be begun as soon as the general condition allows. The opening in the chest wall is not allowed to close until complete obliteration of the empyema cavity has been confirmed by radiography with 'Lipiodol' or 'Neo-Hydriol.' In cases where the empyema becomes chronic his most satisfactory results have been obtained with the Schede type of operation, carried out in stages if the cavity is extensive.

HOSPITAL PROBLEMS IN EIRE

THE late appearance of the fourth general report of the Hospitals Commission has given rise to comment and is difficult to explain. The commission advises the minister for local government and public health on the distribution of sweepstake funds. The report, which furnishes statistical data for 1937 and 1938, was presented to the minister in July, 1939, bears the date 1940, and is published in January, 1942. Many of the contents have suffered from this prolonged cold storage. For instance the commission draws attention to the growing size of hospital deficits, pointing out that unless they are controlled some of the schemes for the development of the hospitals must be abandoned. At the moment it is hopeless to consider the problem of deficits, however appropriate it may have been in 1938. As in earlier reports, the commission stresses the discrepancy between the numbers of available beds in the voluntary hospitals and the numbers in fact occupied. The inconsistency is more apparent than real and is largely due to the necessity of giving the wards an annual spring-clean, and of providing an adequate holiday for the nursing staff. During the months when all the wards are open nearly all the beds are occupied.

There is no doubt that in this respect the Irish voluntary hospitals are behind those of other countries in the keeping of accounts and records, and the commission once more stresses the need for greater coöperation between the hospitals and points out the benefits that have followed in other countries on the establishment of hospital associations. It is several years since the voluntary hospitals of Ireland tried to establish such an association of this kind. It was, however, killed at once by the refusal of the minister for local government and public health to permit the rate-supported institutions to become members.

The Medical Research Council of Ireland and the Hospital Library Council, both of which were established with the help of money from the sweepstakes, continue to do useful work. As a supplement the commission prints a careful statistical report, giving particulars of the sickness experience of the National Health Insurance Society during 1935–36. The society has about 500,000 members, almost a sixth of the entire population of the country. According to the claims for sickness and disablement benefits the greatest cause of incapacity is rheumatism, which in 1935 caused 295,000 weeks of illness, and in 1936 286,000 weeks. Next to rheumatism came respiratory diseases, not including tuberculosis; then in order nervous and mental disorders, heart disease, tuberculosis, and blood diseases. Careful consideration has been given to the geographic and occupational distribution of illness.

TO PREPARE VEGETABLES FOR THE TABLE

LAST year the Medical Research Council summarised our knowledge of the behaviour of vitamins in greenstuffs,[1] and the Board of Education has now supplemented this with some notes on the preparation and cooking of vegetables. The chief aim is to conserve vitamins B and C which are likely to be lost since they dissolve out while soaking and in cooking water, and also run out in the watery juice. The following practical rules are suggested:

Use vegetables as fresh as possible; keep in damp cool place; avoid damage by crushing and bruising.

Vegetables should be prepared immediately before cooking. Soaking overnight is highly undesirable and should be avoided. If vegetables have to be soaked for any length of time, salt (4 tablespoons to the gallon) must always be added to the water.

Outer leaves contain most vitamins and should not be thrown away; they will, however, take longer to cook and should be started first.

Shred green vegetables and slice root vegetables. Plunge all vegetables, green, root and potatoes, into rapidly boiling water, or root or potatoes into heated steamers. Add gradually in order to prevent water going off the boil. Have boilers not more than a third full of water. Add salt to the water before adding vegetables (4 tablespoons to the gallon). Put on lid and cook rapidly for no longer than is necessary to render them tender.

Cook vegetables in relays throughout serving period using the same water for successive batches, adding more water only if necessary. If water is left after cooking use for soups, stews and gravies.

Serve vegetables immediately after cooking and on no account allow to stand for a long time on a hot plate. In central kitchens fill and cover containers immediately after cooking; do not heat again before serving.

In hay box cooking vitamin C is destroyed so that this method should not be used for cooking green vegetables. Steaming of vegetables even with the best equipment is not as satisfactory as cooking in water as described above. The use of bicarbonate of soda is not recommended, but it may be used when cooking separately tough outer leaves which would otherwise be thrown away.

If these precautions are taken, the valuable salts and vitamins present in green vegetables, will be effectively conserved.

1. *Lancet*, 1941, i, 838.

In England Now

A Running Commentary by Peripatetic Correspondents

I CAN'T imagine why no enterprising manufacturer of electrical equipment has produced a gadget for starting one's car off the main these cold mornings. A motor magnate of my acquaintance says there isn't any demand for it, and probably there never would be among motor magnates, but we small-mileage motorists would demand it all right if there was such a thing. It would not do, I imagine, to take the full voltage of the main into the car, so one would want a twelve-volt transformer on the garage wall, with a length of flex to plug in to a socket connected with the starter. Then think of the delight of hearing the familiar whurr-whurr without that sinking of the heart in anticipation of the battery running down. The thing should not cost much more than the price of one recharging of the battery with hire of the garage car for a day. The car of the future will have its socket on the dash for the main, with a switch marked "Mains Starter" and "Immersion Heaters," for once one has the current there it would be a pity not to go the whole hog and keep one's radiator and sump up to something near boiling point, so that one could start out in the morning with a full battery and a hot engine, thus saving the pints of petrol now wasted in bringing the engine up to an efficient temperature.

* * *

The news from the East has seriously disturbed my confidence in Kipling's accuracy. The mention of Moulmein gave me a thrill, but when I looked at the little map in my daily paper I could not make out how, if the British soldier met his "neater sweeter" Burma girl near the old Moulmein pagoda, the dawn could have come up like thunder 'crost the bay because they must have been looking west. The only explanation I can give is that she was paying a visit to an aunt in Rangoon; unless in that city there is a pagoda named after the town on the other side of the Gulf of Martaban. I have learnt for the first time that Mandalay is some 400 miles inland up the river Sittang, but this provides another puzzle. Are there flying fishes in the river? I always thought they were sea-water fish, and imagined the road from Rangoon to Mandalay, where the two sat watching strangers and elephants running, to be somewhere along a sea-shore. Perhaps the word "creek" explains it—some "sludgy squdgy" place, half sea, half river, with the flying fishes leaping from the bows of the ships as I have seen them in the open sea as we entered Bilbao. The other geographical difficulty is how China comes into the picture. But that we can attribute to the British soldier. He is not going to worry whether it was China or Siam, so long as he can bring to mind the picture that 'er petticoat was yaller and 'er little cap was green and feel her arm upon his shoulder where the silence 'ung that 'eavy you was 'arf afraid to speak as they sat cheek to cheek—a pose be it noted that it did not need the present generation to discover.

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I was pleased at Desmond MacCarthy's recent denunciation of the habit of referring to things or public bodies, institutions or offices by the initials of their titles. It is a reprehensible habit to which we doctors are all too prone, and it was a lovely example of "rough justice" that the distinguished literary critic's denunciation should have coincided so exactly with one of the worst examples of this decadent habit ever perpetrated—and, of all places, in the *Lancet*. I was shocked quite sufficiently the first time I heard the Royal Society of Medicine referred to as the "R.S.M.," but to find this distinguished society masquerading under the inhuman, horrid, impersonal monomark of "RSM," as it did in the leading article on p. 144 of Jan. 31, is too hideous to be true. Considerations of space, so eloquently stressed in the patriotic appeals for scrap paper which have recently appeared among the annotations, might possibly excuse the abbreviation "R.S.M.," though even this I am not prepared to concede, but to omit the full stops is unpardonable. It sounds too much like a cross between some mathematical formula and a hideous Wellsian nightmare. Soon we shall see the following account of the proceedings of the Comitia of the Royal College of Physicians.

A Com of the RCP was held on Feb. 1. The Pres, Sir CW, called on Dr RH, the Asst Registrar, deputising for Dr HLT, to read the rept of the Jt Com of the RCP, RCS, BMA and UL. Prof JR moved the reference of this rep to a sub-com, a motion seconded by Sir AB. . . . The following Censors were apptd—Drs JP, TIB, KH and JCB. . . .

Some abreviations, such as those used in prescriptions—t.d.s., p.r.n., I.V.—are probably sufficiently well established to justify their retention, but, while it may be difficult to say where the line should be drawn, unless we do something about it the King's English will degenerate into shorthand. Some abbreviations already in use, such as P.R., which stands for both per rectum and pulse-rate, are ambiguous; others, particularly the designation of diseases by their initials, are positively dangerous; C.T. to the neurologist means cerebral tumour, to the cardiologist it stands for coronary thrombosis; G.U. to the general physician means gastric ulcer, to the urologist it represents the genito-urinary tract. The arch-criminals in this line of country are the gynæcologists. I writhe with æsthetic anguish every time one of my patients returns from my gynæcological colleagues with the diagnosis of E.U.A. On the other hand I get some sadistic pleasure from the knowledge that even the most inveterate users of initials are often ignorant of their correct translation. P.U.O., for instance, is almost always taken to mean pyrexia of unknown origin. In fact, this is a W.O. (War Office) abbreviation, and, as the W.O. will never admit officially that anything is unknown to them. P.U.O. = pyrexia of unascertained origin. No student, and comparatively few teachers, know the correct usage of N.A.D. (nil abnormal detected) as opposed to N.A.C. (no abnormal constituents). No exception can be taken to the use of initials in the presence of patients as synonyms to disguise unpleasant diagnoses. Obvious examples of these are G.C. for gonorrhœa, V.D. for venereal disease, P.T. for pulmonary tuberculosis, and C.S.M. for cerebrospinal meningitis. But even here other synonyms are safer, such as Neisserian infection for gonorrhœa, and Koch's infection for tuberculosis. But why continue? The *Lancet* has tolled the knell of parting literary standards. In alliance with G.B.S., we shall now witness a frontal attack on the glories of English as she was written by Charles Lamb, Macaulay and Matthew Arnold and its conquest by the "simplified English," which so appeals to the greatest of our living dramatists.

* * *

The discussion in the *Times* about rebuilding the City may have been a premature delivery but the suggestions of the Provost of Eton had a lithopædion flavour. Just fancy his memorial arch at the bottom of Ludgate Hill. What an excellent target for enthusiastic medical students to climb, hang banners from, even decorate with those pieces of sanitary earthenware which an elderly peripatetic correspondent says he can find no longer under the beds of the houses at which he stays. I have a longing that some of the open spaces, left when the demolition squads have razed gutted buildings, shall remain and be covered by grass kept in that perfect order which is achieved when the Office of Works takes over ancient abbeys. As one imagines the monks treading the erstwhile corridors, so our grandchildren and descendants would imagine the plutocrat of London Wall waddling to his chop-house. And the concreted shells of famous warehouse basements now filled with deep water for fire-fighting could be a nucleus of a system of pleasant watercourses down which the sedentary workers could punt their best girls during dinner hours in summer, or along which they would skate in winter. I am not surprised that green belts are so little sought after when the city worker knows so little of their pleasure. In summer the solicitors' clerks (or other people, probably not F.R.C.S.'s) revel in the green of Lincoln's Inn Fields. Why cannot opportunities be made for others in the City? Why should the city clerk be condemned to underground dens for lunch, when in summer he might seek pastures new, and in winter skate his way along to some super-cafeteria, where queueing is no more and stockbrokers are at rest?

From the medical student's point of view the chances in rebuilt London are legion. The medicos in their "digs" at Putney will board their barge (why shouldn't all the hospitals have barges like colleges do at Oxford,

only peripatetic ones ?) and make their way down stream listening to the morbid anatomist giving his lecture on the river instead of in the theatre at 9.15 A.M. As a student I disliked 9.15 lectures; as a chief I positively vomit at the thought of them. Thomas's and Westminster men will leave at Lambeth Bridge, Charing Cross at Hungerford, Bart's at Blackfriars, Guy's at London Bridge and the Londoners at Wapping Quay. How much more satisfactory than the crowded tubes. There will have to be an offshoot of the Regent's Canal for Mary's men, and for the Middlesex and U.C.H. George's new buildings will be planned in relation to the barges, and if King's don't like it they will have to move. Small cubicles could be booked for crammers, and suitable refreshment served. How much more satisfactory than the crowded mess-rooms of our present colleges. There could indeed be a midder barge with museum specimens, pelves of all dimensions, and amniotic fluid in abundance; a surgical barge with similar specimens and so on. It would be better than trying to study a Lewis's library book standing between two shop assistants from Gamage's, a stockbroker's clerk and a city typist. The revision viva voce courses could all take place in friendly inter-hospital rivalry. Incidentally, this might be a step towards United Hospital playing fields, thus saving those journeys to Chislehurst, Wembley, Hale End and Honor Oak. It might, of course, mean that Harley Street would have to move. But fifty years ago consultants lived in Finsbury Square, and to keep Harley Street on the hop would certainly be a tenet of those organising state medicine.

* * *

With his talks on U.S., U.S.S.R., and US, Sir Stafford Cripps reminds me of the afternoon I saw the clean pigs. Like all the best peripatetic correspondents, I dote on animals; and the pigs looked splendid in their well-appointed suites. As usual, however, I was chiefly thinking about my tea; and I was unfeignedly thankful when the chairman of the collective farm invited us all —the two French, the three Americans, the interpreter, and me—to his wooden home. His small daughter, radiant on a new birthday bicycle awarded for her father's social merit, led a foraging expedition to the village; and within the hour we were enjoying fish and sausages and cheese and wine, transmuted by Russian friendliness into an international feast. When this was over we drank solemnly to the memory of Lenin, and devotedly to Comrade Stalin; then to the French Republic, and then to the United States. I waited bashfully for the coming toast to Great Britain. But it never came; and I suddenly remembered that our Empire is a monarchical tyranny where man-eating plutocrats exploit workers of all colours and ages.

I said to myself that, if they only knew, the builders of the new Russia would find more to please them in England than in the States. And I now feel sure that when America, Britain and the Soviet Union take the world in hand we shall be needed as a link between the two very different societies east and west.

Are we not indeed a natural meeting-place for ideas and people from anywhere and everywhere? In a country cherishing so many incongruous institutions—feudal, socialist, theocratic, capitalist, communist, imperialist, altruistic, and merely fantastic—even the Man in the Moon could find reason to feel politically at home.

* * *

Years ago at the Ring, Blackfriars, I watched a little man with a moustache and a bowler hat at the back of the arena, who ever and anon indignantly sought to stimulate a boxer by rising to his feet and shouting, "Cow-erd, cow-erd." It was the criticisms of the Government's conduct of the war by Messrs. Hore-Belisha and Shinwell that reminded me of this incident. At the end of our lane is a big country house crowded with soldiers. I happen to know that although they could easily do so they don't take a newspaper, nor have they a wireless, but they seem perfectly happy. I feel that these not unrelated phenomena could be expressed by one of those pithy laws on the expansion of gases and like subjects which we used to read in the physics books. When a nation goes to war the individual energy so liberated can be expressed by service (S), by stimulation to service (C), or by a combination of both, in which case the intensity and quantity of C varies inversely with the intensity and quantity of S.

Letters to the Editor

ZIPP

SIR,—I have now treated 313 wounds of various kinds with zipp, a paste similar to bipp but with zinc oxide taking the place of bismuth and now included in the BPC formulary as zinc and iodoform paste. The wounds included 55 open fractures, of which 46 have now united in an average period of 60 days. I have had no cases of gas gangrene, iodoform poisoning, dermatitis or maggot infestation and there has been no repulsive stench.

I am very anxious that the claims of iodoform pastes, which have over and over again proved their worth under very difficult conditions and in the hands of the most competent observers (e.g., Rutherford Morison, Treves, Macewen, Gordon Watson, A. K. Henry, J. H. Saint), should not be overlooked in the present war. Had it no other virtues, the mere fact that zipp is sterile (although unsterilised) makes it much more useful than 'Vaseline' under conditions of active warfare. Sterile vaseline in sufficient quantities is often unavailable when most wanted to meet a sudden large inrush of wounded. I make no claim that zipp represents the ideal iodoform paste, but merely that certain qualities which it possesses allow it to be used exactly as sterile vaseline is used in the orthodox Winnett Orr technique, whereas bipp, on account of its toxicity, can be used only as a thin smear or pellicle in wounds. The question of incorporating sulphanilamide in an iodoform paste (as in Hoffmann's zisp) calls for consideration, but my own belief is that the economical method of exhibiting modern chemotherapeutic drugs—by mouth—will prove to be more efficient than any kind of sulphanilamide pack. Since sulphanilamide has a powerful but transient antiseptic action in wounds, it does not really compete with the iodoform pastes which have a much weaker but sustained action.

A new zipp which I made and in which zinc peroxide was made to replace zinc oxide was found to liberate free iodine when incubated in the dark at 37° C. Nevertheless, it was not nearly so satisfactory in practice as the original zipp, and I have given it up.

I feel convinced that the modern tendency to abandon the intelligent use of antiseptics (except the sulphanilamide group, which has almost hypnotised the therapeutic imagination), and to rely for wound healing and disinfection entirely on the defensive and reparative processes of unaided nature, is unscientific and represents an uncritical overswing of the surgical pendulum.

Nairobi, Kenya Colony. W. V. CONNELL.

MASS RADIOSCOPY IN FACTORIES

SIR,—Dr. Philip Ellman sees in the article of Dr. Stephen Hall a matter for congratulation and he would apparently encourage others to adopt this in similar circumstances as "the method of choice." Is he aware of the dangers to which such investigators are subjected? Using a unit which most experienced radiologists and probably the National Physical Laboratory would regard as inadequately protected for such examinations, Dr. Hall held sessions of 2½ hours each at which he submitted each of 795 workpeople in one factory to a radioscopic examination occupying rather less than a minute. Has he any idea how long this can be kept up? Personally I regard it as a very dangerous proceeding which should be prohibited. Dr. Hall states that at his consulting-room "my practice is to conduct my examination almost entirely by radioscopy," which apparently he finds as satisfactory as his radiography. I have demonstrated on many occasions that the direct radiogram will reveal lesions which the screen failed to indicate and now do not believe it is wise to rely entirely on the screen examination. The superiority of the direct film over the miniature photograph of the screen image has been proved by all workers. Yet Dr. Ellman and his co-workers advise that the more accurate direct radiographic examination should be dependent upon the detection of positive findings at a mass examination. I would certainly not agree to accept the opinion that all the negative miniatures would prove negative to direct radiography. Neither would I accept the opinion that

all with negative direct radiograms were free from tuberculosis.

What was accomplished with this survey to warrant its repetition? Of 795 workpeople examined it was found that "2 of them were known established cases of phthisis and 1 other was found to have active disease." These 2 known cases were allowed to work in the factory—there is no legislation to stop them though they may be potential sources of infection. Unless you can adequately provide for them and for any others he may detect it is surely unjustifiable to add to their burden, to emblazon their disability before their employers and fellow workers. He has no right to assume that the workpeople have no idea of the nature of the disease he seeks. He admits that "The limitations of this method of survey were impressed upon me three weeks later when one of the girls whom I had examined at the factory and declared to be free from tuberculosis was admitted to my ward with a large tuberculous peritoneal effusion."

Dr. Ellman says, "From my experience there is little doubt that it is an inexpensive method of detecting macroscopic lung lesions." I suggest that the method has not been used for sufficient time for anyone to estimate the cost in personnel. I should expect it to be very high.

Edgbaston, Birmingham. JAMES F. BRAILSFORD.

SIR,—As far as I know Pilkington Brothers Ltd. were the first industry in this country to use miniature screen photography as part of the routine examination of employees. Up to date 1500 examinations have been made and the results are now being examined with a view to publication later. Judging from answers to questions in Parliament and comments elsewhere, one of the factors that seems to prevent a more widespread use of this method is lack of suitable apparatus. Through the kind coöperation of the borough medical officer of health (Dr. F. Hauxwell) and the borough health committee we were assisted in establishing the miniature radiography plant in our works surgery by the tuberculosis officer, Dr. W. Griffel.

We already had a Victor Snook 'Senior' X-ray plant equipped with a duo-focus 2/10 kV oil-immersed tube. To this was added—as suggested by Dormer and Collender in the *Lancet* (1939, i, 1309)—a lead-covered light-proof cone fitted with a Levy-West screen at the wide end and an aperture for the camera lens at the other. The camera, which is a simple box with a sprocket arrangement for film transport, is fitted with a 'Xenon' f 1·5 lens. The cone is supported on a tubular steel frame which is permanently fixed to the concrete floor. Between the tube stand and the cone is a small platform, worked hydraulically, which enables one with ease to adjust the position of the patient relative to the tube and cone. This does away with the need for the complicated arrangement that would be necessary for the simultaneous movement of tube and cone. For identification the patient's name, clock number, and the date are photographed on each film at the same time. This is done by printing the name, &c. in Indian ink on a strip of old film and inserting it by means of a metal slide in front of the screen in the left upper corner above the patient's left shoulder. The names are also recorded in a book in the exact order of examinations as a further check. The film used is one specially prepared by Kodak Ltd. for this purpose and is known as 'Flurodak.' For this type of work it is definitely faster than the fastest panchromatic film. The exposure times vary, in our series, from 1/5 to 3/10 sec. at 85 kVp and 150 mA at a focal-spot screen distance of 36 in.

The film strips are viewed by projecting them on a screen consisting of a sheet of 'Kodaloid' (obscured celluloid sheet) placed between two sheets of plate glass measuring 8 × 8 in. Very fine grain is obtained on this type of screen and the reflection—so tiring in viewing—is largely reduced. A resistance is fitted to the projector lamp and the light varied according to the density of the film. No definite diagnosis is made on the film alone; any abnormality detected is taken as an indication that a large radiogram and further clinical investigation are needed. In our scheme the films are viewed by Dr. Griffel who has great experience of this method.

Dr. Ellman raises—as did Dr. Morgan in an earlier issue (*Lancet*, 1940, ii, 246)—the point of victimisation of the worker. It has been the accepted practice here that the results of any examination of the "welfare type" as opposed to the "compensation type" should be confidential, and not disclosed to the management without the worker's consent. This I regard as essential to the success of any works medical welfare scheme. If a pathological condition is discovered the patient's own doctor receives a report and he generally follows it up by arranging any further investigation that is necessary. Any advice as to change of occupation or the giving up of work would have to come from him and not from the works medical officer.

There is, however, one type of case on which I should like guidance—namely, that of the comparatively healthy chronic carrier. He may be working in a part of the factory where the risk of infecting fellow-workers is great. If the works medical officer arranges his transfer would this be "victimisation"? My own view at present is that to allow a sprayer of tubercle bacilli to remain amongst adolescents and young adults would be to make them the subject of a far worse form of victimisation. But how to solve this problem without a breach of confidence is beyond me.

R. MORRIS JONES.

CLINICAL TEACHING

SIR,—I submit that the time has come when medical studies in London should be reorganised. It is well known that the student learns most from the medical and surgical registrars of his hospital. These young consultants are rapidly being absorbed into the fighting services. The duties of class 2 officers of the EMS are not onerous. I suggest that all of them shall be called on to take a share in teaching students. The clinical material in the LCC hospitals and so-called non-teaching voluntary hospitals must be made available for this purpose. A greater concentration of effort is to be made by us all at the present time. May I plead that the medical student shall be equipped with the same standard of knowledge as was given him in peace-time?

Brook Street, W.1. CLIFFORD MORSON.

RECURRENT NEUTROPHIL AGRANULOCYTOSIS

SIR,—I was greatly interested in the case described in your issue of Jan. 24 by Dr. Barsby and Dr. Close of the woman of 41 with attacks of pyrexia associated with neutrophil agranulocytosis. This case calls to mind a child of about 5 years that we had in the children's ward at Guy's, I think in about 1927. This child had similar attacks of pyrexia, occurring about once a month, each attack being accompanied by a more or less complete absence of polymorph cells from the circulation. As in the case cited by your correspondents, it was possible to foretell an attack by the diminution in numbers of these cells. During an attack, we used to give her a substantial transfusion which seemed beneficial, but after some months she was taken home, where she shortly developed bronchopneumonia and died. There was no post-mortem examination. No doubt it would be possible to find particulars of the case in the hospital records.

Hayward's Heath. J. W. SHACKLE.

DOSAGE OF INSULIN

SIR,—In THE LANCET of Feb. 21 (p. 238) you report a death due to an overdose of insulin. In view of the chaotic state of insulin labelling I am surprised that more deaths do not occur. A strong protest from members of the medical profession is long overdue. One of my duties is the supervision of a clinic for diabetics and a good deal of my time is spent in explaining the intricacies of "double strength" insulin to my patients. Some of them have insulin syringes marked in units (1 c.cm. = 20 units), others have ordinary syringes marked in decimals of 1 c.cm. up to 1 c.cm. and also in minims up to 20 minims. They often take this latter reading to indicate insulin units until shown otherwise. The whole position could be simplified by having a standard insulin syringe engraved in, say, red, white and blue. The red graduations could be for "quadruple strength" insulin (80 units per 1 c.cm.), the blue for "double strength" (40 units per 1 c.cm.), and the white for single strength. If at the same time all insulin were supplied in bottles whose labels were coloured in the same way as the syringe graduations to indicate the strength of the contents, the liability to error would be much reduced. Perhaps there

are other and more practical suggestions. In any case something ought to be done about it.

W. W. WALTHER.

Queen Mary's Hospital for the East End.

STIGMA

SIR,—You remarked in a leading article (Feb. 7, p. 174) on the demise of "Colney Hatch" as a place name. A name well known in the United States disappears by the omission of "Bloomingdale" from the title of what is now to be called the Westchester Division of the New York Hospital. This change was necessary because, as the name of an asylum for the insane, it had become the special target for the obloquy still cast upon our fellows who suffer from a particular kind of illness. That such a change should be necessary is regrettable, for the name of this justly famed hospital had come to serve as an instrument of ignorance and superstition not only in popular speech but on the vaudeville stage and in the press, so that it was difficult for a family to accept the idea of one of its members going to Bloomingdale. Similar conditions have arisen in this country and have been similarly met, though for obvious reasons no protest could be publicly made on the occasion of so shameful a necessity. Popular speech is difficult to influence, but it ought to be possible to ensure that a protest should be conveyed to those concerned whenever in print or on the stage this ugly tendency shows itself, either in respect to an institution or to the affliction of insanity itself. Perhaps one of our societies interested in mental welfare might persuade its members to do this watch-dog duty.

ARGUS.

SULPHONAMIDES AND ENTERIC FEVERS

SIR,—During the 1941 epidemic of paratyphoid in Bristol sulphapyridine was given to a number of patients, but the results were such that it was soon stopped. They felt much worse, headaches became more severe, nausea and vomiting increased, and the diarrhœa and toxæmia continued unabated. Dr. Russell's letter prompts me to describe briefly a case in which sulphapyridine was administered for another condition and paratyphoid developed while under treatment.

On the sixth day of illness a girl aged 14 months was admitted to hospital with meningitis. Culture proved the infecting organism to be *Hæmophilus influenzæ* (confirmed independently in two laboratories) and 3 g. of sulphapyridine was given daily for 9 days. After initial improvement her condition deteriorated and on the 20th, 21st and 22nd days of illness she again received 3 g. of sulphapyridine, or a total of 36 g. during the 16 days in hospital. The child developed diarrhœa and from the stools *Bact. paratyphosum B* was isolated. Sulphathiazole was now started in daily doses of 4·5 g. After 31 g. had been given the cerebrospinal fluid was sterile and the meningitis had cleared up. Despite these large doses, however, the paratyphoid was unaffected and the child died from the infection on the 32nd day of illness. No autopsy was made.

Clearly in this patient sulphapyridine failed to prevent the onset of the paratyphoid infection and the sulphathiazole failed to alter the course of the disease. This is entirely in accord with previous experience that sulphonamides have no favourable action in paratyphoid.

Bristol. J. N. P. DAVIES.

THE FUTURE STAFFING OF HOSPITALS

SIR,—Plato, visualising the ideal state, looked forward to the day when all kings would be philosophers or all philosophers kings. In the much-discussed postwar reconstructed state of ours Dr. Alcock appears to look forward to the day when all GPs will be specialists or all specialists GPs. In a truly democratic state there is a rightful place for every one of its members; and the individual should be judged not on his position but on the usefulness of his function towards the common weal. No-one is denying the usefulness of the GP; similarly the specialist should not be denied his position. From his letter of Feb. 21 Dr. Alcock seems to gauge the usefulness of the hospital specialist on the percentage of men returned fit for the Services, which he goes on to say is far less than the specialist imagines. Is he then insinuating that his proposed ideal hospital run by GPs (who are already supposed to be much overworked) would make a better job of it, and turn out a higher percentage of cures of duodenal ulcers, diabetes and tuberculosis? Dr. Alcock says that the GP must be the prime consideration of the nation. Judging, however, from his proposed oligarchy of GPs running the hospitals we suspect that what he really means is that the nation should become the prime, and almost exclusive, consideration of the GP.

In the brave new world there will be a place in the sun for us all—the hospital specialist, the GP, and even the patient—and until we see the victorious conclusion of this war, and the return to civil life of our colleagues now in the Services, who will then be able to take their rightful place at the treaty table in helping to work out a more satisfactory solution than that so didactically stated by Dr. Alcock, we advise him to content himself with the words:

> "Better it is to be of an humble spirit with the lowly, than to divide the spoil with the proud."

RICHARD ROE and others.

ASSOCIATION OF AUSTRIAN DOCTORS IN GREAT BRITAIN

SIR,—It might be of interest to your readers to hear of the setting up of an association of Austrian doctors in Great Britain under the chairmanship of Prof. F. Silberstein, late of Vienna University. We want to continue the noble traditions of the Vienna medical school in the spirit of scientific progress of Pirquet, Wenckebach, Chvostek and Landsteiner. Our association, affiliated to the Free Austrian movement, aims to make all our colleagues participate in the war effort of Great Britain and her Allies, and at such places as their skill is most needed. We endeavour to collaborate with all medical organisations and with individual representatives of British medicine. For obvious reasons we Austrians, the first victims of Nazi oppression, are willing to do our utmost to help the Allied cause. More than half of the 360 Austrian doctors in this country are already engaged in work of national importance, in hospitals and other institutions all over the country; but about 160 are not yet participating in the war effort. Prof. Samson Wright, Prof. S. P. Bedson, among others, have expressed their readiness to help us. Any suggestions from your readers will be welcome. We are holding meetings periodically where we hope to welcome British friends.

A. HAMMERMANN,
Hon. Secretary.

Eastern Hospital, E.9.

STUDENTS IN UNIFORM?

SIR,—As a student, I think your peripatetic correspondent and your leader were both too kind to us. Whether we wore uniform at times or all the time, we should still have made the decision not to risk our lives at this particular moment; and in making the decision we certainly are not, at this moment, serving our country. We hope to be able to serve it when we are qualified, but if the war ends it will be a safe and rather well-rewarded sort of service. Your leader remarked that there are no cushy jobs for students today, but there are—I have one. I work fairly hard, and the Home Guard has not proved "impracticable" so far, although promotion in the Home Guard is apt to be a bit of a disaster; but I live in security, and I have time to go out to dinner and see films. My non-medical friends were going to be architects, schoolmasters, parsons; and some of them still may be, but over a third are dead. Under circumstances like these it seems absurd to attempt to allay our unrest with uniforms and encouraging words. The plain fact is that we preferred medicine and the possibility of future usefulness to immediate service and battle. It surely does not hurt us to realise that, even in the eyes of those who like us, we cannot expect honour until we have done something to deserve it.

STUDENT.

At the annual meeting of the Central Council for District Nursing in London it was reported that during the year 1940–41 over 3400 patients were treated and 92,048 visits made. Over 84,000 "insulin" visits were also paid. The LCC makes an annual block grant of £4400 for this work to the district nursing associations.

Obituary

CHARLES EVANS ELLIOTT

M.B. CAMB. ; ACTING SQUADRON-LEADER R.A.F.V.R.

Squadron-Leader C. E. Elliott, who was killed in Malaya a few weeks ago, was the son of the late Dr. Charles Elliott who for many years had been a medical missionary at Chengtu-Szechuan. He was born in 1909 and educated at Clifton College, and Corpus Christi College, Cambridge, where he got a half-blue for putting the weight. He qualified from St. George's in 1934 and after holding house-appointments there and clinical assistantships at the Infants Hospital and St. John's Hospital for Skin Diseases he went into practice with his father in Leicester. He took his B.Chir. in 1936 and in the same year left Leicester to set up in practice on his own at Hyde Park Gate. He had joined the R.A.F.V.R. early in 1939 and shortly before the outbreak of war he was called up, and saw some service in France. He was sent to Singapore about a year ago. A friend writes: Elliott was a magnificently built man, who always kept himself in good training. His keen and inquiring mind made him a good companion, and many friends shared his infectious enthusiasms. But medicine was always his main interest and he spent much of his leisure reading and attending hospital clinics, eager to keep in touch with new ideas which could be usefully applied in general practice.

FRANK LEWIS SMITH

C.B.E., M.R.C.S. ; SURGEON REAR-ADMIRAL R.N.

Surgeon Rear-Admiral Lewis Smith's sudden death on Feb. 18 on his way to work in the department which he loved is probably what he himself would have wished, but both the Navy and its medical branch are the poorer for it. Born in 1881, the son of Ralph Smith of Whitby, he was educated at Dulwich and St. Thomas's. He entered the Royal Navy in 1909 and returned to England from service in China shortly before the last war. He served in the Royal Navy hospital at Pembroke Dock till 1916, when he joined H.M.S. *Caroline* in the Grand Fleet. Later he was appointed to the Royal Naval hospital at Chatham as specialist in radiology. After further sea service as senior medical officer of the aircraft carriers *Hermes* and *Furious* he came to the Admiralty in 1926 as assistant to the medical director-general. On his promotion to surgeon captain in 1931 he went as principal medical officer to the Royal Naval barracks at Portsmouth. Three years later he was put in medical charge of the Royal Marine infirmary and depot at Deal. When he retired in 1938 he was advanced to the rank of surgeon rear-admiral. His cheerfulness and knowledge of the world and of the service made many turn to him for counsel, and he was always ready to help. Nothing was too much trouble, and if he did not know the answer he could always suggest a way to find it. In 1915 he married Gertrude Mary Thomas and they had one daughter.

ARTHUR KEITH GIBSON

M.B. EDIN. ; MAJOR R.A.M.C.

SMALL, round-faced, dark and active, with a liquid Scottish accent tapping an unfathomed source of droll conversation, Dr. Arthur Keith Gibson was not the standard pattern of a heroic figure ; he certainly never saw in himself a resemblance to anyone more distinguished than Plain Mr. York of York, Yorks, of whom he could at one time give a telling impersonation. But to those who knew him it is no surprise to learn that he volunteered to look after Russian prisoners with typhus in a German camp.

He studied medicine at Edinburgh University, qualifying M.B. in 1916. After holding house appointments at the Royal Infirmary he joined the RAMC special reserve and reached the rank of captain. Later he went into general practice in North Kensington—a hard practice where many poor families lived in overcrowded rooms and often hesitated to call in the doctor for fear of the expense. Gibson, who had become a keen member of the British Medical Association, was always planning ways in which the dependants of insured persons could be provided with regular medical attention without being haunted by this dread of a bill. He was one of the prime movers in establishing the London Public Medical Service —a scheme for insuring poor people for a very small weekly sum against all their medical needs. He insisted that the scheme must be thorough, sound and business-like, and with great vigour and fertility he went into every detail. Even the monogram for the notepaper must be just so: his blotters about that time were covered with the letters LPMS entwined in a variety of entrancing ways. But with all his interest in detail he had a keen eye for an intelligent short cut. His interest in medical politics led him far in the BMA, to which he became regional secretary for the London area—the first to be appointed in England.

In 1939 he rejoined the RAMC with a temporary commission as major, and while acting as registrar to a military hospital was taken by the enemy at the time of Dunkirk. Under the Geneva Convention a medical prisoner cannot be asked to help in the treatment of infectious disease ; Gibson chose to work hard for the Russian prisoners whom he had offered to attend, and died himself of the infection. In a report to the Swiss Red Cross the German medical authorities pay tribute to him, and he was buried with full military honours. He leaves a wife and children.

KENNETH MACKENZIE

M.D., M.CH. EDIN., F.R.C.S.

Mr. Kenneth Mackenzie, who died at Auckland on Jan. 15, at the age of 56, was an outstanding figure in New Zealand medicine. After graduating from Edinburgh in 1908 Mr. Mackenzie gained his M.D. in 1911, his fellowship in 1912 and his M.Ch. in 1913. He returned to New Zealand to practise as a consulting surgeon and was soon appointed to the honorary staff of the Auckland Hospital where for many years he has been one of the senior surgeons. He was a grand teacher with a natural gift for imparting knowledge, and his ward rounds will be remembered by successive generations of students. Although his special interest was in gynæcological surgery Mackenzie was an accomplished and skilful general surgeon who could perform with equal finesse an excision of the larynx or a radical clearing of the pelvis, and the more difficult the case became, the more confidently he seemed to handle it. In all he undertook he was thorough. Case-notes of every patient under his care, either in private or in hospital practice, were filed. Nor were these records left undisturbed, for by careful analysis of his work and results Mackenzie was always striving for greater perfection.

GEORGE BERTRAM DAVIS

F.R.C.S.

Mr. Bertram Davis, who died on Jan. 29, was the middle of three brothers educated at Bishop's Stortford College. Bertram was on the classical side and was a gifted actor and musician as well as a first-class cricketer. He qualified from King's College Hospital in 1934, and after holding house-appointments took his fellowship in 1936. Surgery, writes an old schoolfellow, was his strong bent and his method of retaining an indwelling catheter in the urethra with four pipe-cleaners has been described in most general and urogenital works on surgery. He left England a few years ago and took over the running of a leper colony in Southern Rhodesia, where he did useful work. But he found the climate bad, and contracted malaria. His spleen was removed about a year ago, but the disease lingered in his body and he died suddenly in a malarial coma at the age of 31.

RICHARD HUGH SMITH

B.A. CAMB., M.R.C.S., LIEUTENANT R.A.M.C.

Dr. R. H. Smith died suddenly from cerebral hæmorrhage at Enniskillen on Feb. 18 some two months after he had joined the RAMC. He was educated at Cambridge University, where he graduated B.A. in 1932 and qualified from St. Thomas's Hospital in the same year. He joined a firm of general practitioners in Poole two years later. N. H. R. H. writes: Smith always preferred to work among the poorer classes and he would go out of his way to give them the best that was in him. He loved the country and was happy attending country folk. His hobby was agriculture and he was an enthusiastic supporter of the Government scheme for growing more food at home. He spent a great deal of his spare time working on his own plot of land.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, M.P.

THE House of Commons is becoming progressively more and more realistic. When we met last week for the debate on the war situation the effects of the previous criticisms had been manifest in large-scale ministerial changes. The addition of Sir Stafford Cripps to the Cabinet with the office of Leader of the House was welcomed on all sides and most welcomed perhaps by the Prime Minister himself. Mr. Churchill has felt the strain of leading the House, in addition to all his other duties, and told the House so on a recent occasion. Sir Stafford has demonstrated to the nation by his broadcasts on the Soviet Union how realistic his attitude is, and his answers in the House have given further proof of this quality. Among many speeches, that of Prof. A. V. Hill, F.R.S., put the point of view of the scientific mind with force and lucidity. He dealt with "the prevalent feeling of alarm" in connexion with the recent series of reverses and disasters. He said that the country can take these things "if it is sure that something vital is not being missed, that we are working on a plan which is reasonably sound and that there is not some fundamental error, either in our organisation or in our outlook." What was necessary was an "exact knowledge of weapons and equipment," and science and engineering should be regarded as equal partners, and not merely the handmaidens, of statecraft and generalship. "This expert knowledge of weapons is not the same thing as a rhetorical habit of using brave adjectives about big and beautiful bombs." Professor Hill called for a combined general staff with executive functions and for the continuous pursuit of operational research by a technical staff which is a part of it. He also referred to "a scientific panel" which has been sitting for about nine months advising the Admiralty and asked whether "due and urgent regard is being paid to their somewhat drastic findings." The debate went on for two days and was wound up by Sir Stafford Cripps, who replied in detail to many of the points raised. The replies pleased the House and, as Mr. Austin Hopkinson said, "So direct have his statements been that it will be our duty to watch him and see that they are implemented as clearly as they were stated." The House at any rate has come out of the rhetorical clouds.

* * *

One of the especially interesting announcements in the House during the week was given by Mr. Attlee in answer to Miss Eleanor Rathbone when he set out the revised constitution of the committee of inquiry on the women's services. A short time ago the Government's announcement that four male under secretaries were to investigate conditions in the ATS, WAAF and WRNS was greeted with a howl of protest. The protest led to the appointment of a large committee to go in delegation to discuss the matter with an embarrassed Mr. Attlee. This climb down of the Government is the result. The new committee will go thoroughly into accommodation, illness, food, drilling and duties and indeed any question which seems relevant to the morale and health of the women's services. Miss Ward and Lady Davidson, who are not on the committee, will place the evidence they have gathered on women's services before it, and Navy, Army and Air Force staffs will be anxious to help. Some camps have been adversely criticised and there have been whispers of bad conditions. But there is certainly no grave scandal to uncover though many adjustments in conditions of service might well be made. The House is satisfied that a predominantly women's committee has been appointed. Up to the present time there has not been an adequate representation of women on the staffs of Army commands and of corresponding Naval and Air Force formations.

Replying to a question, Mr. T. JOHNSTON stated: In Scotland the maternal mortality-rates per 1000 live births for the years 1939, 1940 and 1941 were 4·5, 4·4 and 4·9 respectively. Schemes under the Maternity Services (Scotland) Act, 1937, are in operation in 40 out of the 55 local authority areas.

QUESTION TIME

Women's Service Inquiry

Mr. C. ATTLEE, replying to Miss ELEANOR RATHBONE, announced that after considering the representations made by members of the House the Government have decided to set up a committee with the following terms of reference:

To inquire into and report on amenities and welfare conditions in the three women's Services and to make recommendations.

The committee will consist of the following:

Miss Violet Markham, deputy chairman of the Assistance Board (chairman); Miss Thelma Cazalet, M.P.; Mrs. Walter Elliot, chairman of the National Council of Girls' Clubs; Major James Milner, M.P.; Air Vice-Marshal Sir David Munro, M.D., secretary of the Industrial Health Board of the Medical Research Council; Mrs. J. L. Stocks, principal of Westfield College, University of London; Dr. Edith Summerskill, M.P.; and Major-General Sir Frederick Sykes, M.P.

University Grants

In view of the vital part played by the universities in the life of the community, the importance of maintaining so far as possible standards of university education, and the essential contribution of the universities towards the national effort, the provision for 1941 was maintained at the same level as that for 1939 and 1940, namely, £2,149,000. The impact of the war on university finance has so far been less severe than was expected. On the other hand, while the repair of physical damage resulting from enemy action can be dealt with under the existing War Damage legislation, the repair of war damage is by no means the only problem, involving large demands on university funds, which will arise on the conclusion of hostilities. With these considerations in mind the Government, after considering a report from the University Grants Committee, have again decided to maintain the provision for 1942 at its existing level. (Sir KINGSLEY WOOD replying to Sir E. GRAHAM-LITTLE.)

Hours of Work for Boys

Mr. KENNETH LINDSAY asked the Minister of Labour what steps he is taking to restrict the hours of labour for boys between the ages of 14 and 18, so that they can take advantage of the scheme of National Youth Service?—Mr. E. BEVIN replied: I am desirous of assisting the scheme in every possible way, but in present circumstances I should not be justified in doing so by reducing the hours of work below those which are legally permissible and are reasonably practicable in the particular establishment.—Mr. LINDSAY: Is the Minister aware that of six boys whom I interviewed last night under the National Registration Scheme one was working 77 hours a week, one 68 and one 66½—that is 50% of the boys whom I saw; and while I admit that not one of them objected to helping the national effort in this way, is it the policy of the department to agree to such hours?—Mr. BEVIN: Not to such hours as those.

NHI Administration

The Secretary of State for Scotland and the Minister of Health have recently reviewed the administration of National Health Insurance, with a view to effecting the maximum economy in man-power. Some of the more important economies decided upon will be embodied in a circular which is to be issued to approved societies shortly, and others will be announced so soon as the necessary regulations have been made under the war-time powers conferred by section 8 of the National Health Insurance Act, 1941. These emergency measures for the simplification of work will be brought into operation from the earliest practicable dates, so that societies may be afforded the greatest possible relief in the current half-year. (Miss F. HORSBRUGH replying to Mr. D. G. LOGAN.)

Mental Defect in Discharged Soldiers

Before being discharged from the Army soldiers suffering from serious mental defects are given a period of treatment in suitable military institutions, with the object of restoring them to such a degree of mental health as will permit of their being sent to their homes on discharge. Those who still cannot safely be cared for in their own homes are transferred to appropriate civil institutions. (Mr. D. SANDYS replying to Mr. E. W. SALT.)

Service Pensions for Psychoneurotics

Provision is made by the Ministry of Pensions for the treatment in special neurological centres under the EMS of men discharged from the Services suffering from neurosis

provided they are likely to benefit by such treatment. This treatment is granted whether the condition is attributable to war service or not. If the condition is accepted by the ministry as attributable to service and disablement cannot be removed by treatment pension is awarded.

Scientific Advice on Flour

Sir E. GRAHAM-LITTLE asked the Lord President of the Council whether he was aware that in August, 1940, the Medical Research Council reported that flour for bread should contain the wheat-germ and that chemical bleaching of flour should be prohibited, but that up to the present 95% of the flour issued had been deprived of all its wheat-germ and been chemically bleached; and whether he would, in conjunction with the Ministry of Food, ensure that effect was given to the recommendations of the Medical Research Council.—Sir JOHN ANDERSON replied: I am aware of the recommendations which the Medical Research Council have made on this subject. As regards the prohibition of chemical bleaching and "improving," the recommendation has been qualified by the statement that further investigation is necessary. In answer to the second part of the question, I may explain that the function of the council is to give scientific advice on the basis of existing knowledge and to promote research where that knowledge is inadequate. The action to be taken is primarily a responsibility of the Ministry of Food.

Communal Feeding Centres

Replying to a question, Major G. LLOYD GEORGE said: The numbers of communal feeding-centres (i.e. Londoners' Meals Service centres and centres set up by voluntary organisations) set up in London are as follows: City, 5; Westminster, 9; county of London, 228; making a total of 242.

Fire-watchers' Bedding

Mr. RHYS DAVIES asked the Home Secretary whether he will arrange for all bedding used by fire-watchers and kindred services to be fumigated periodically?—Mr. H. MORRISON replied: I think it may reasonably be assumed that local authorities are alive to the importance of suitable preventive measures of this kind in services for which they are directly responsible, while the Fire Prevention (Business Premises) Order placed an obligation on the occupier of the premises to provide and maintain proper bedding, and the enforcement of this obligation is a matter for the appropriate authority under the order.—Mr. DAVIES: Would the Minister be good enough to call the attention of the local authorities to this problem, so that bedding may be fumigated to prevent the spread of scabies and other diseases?—Mr. MORRISON: I will consider that point, but fire-watchers are very active in making complaints if anything is wrong and I, of course, look into their complaints.

Public Health

From the Annual Reports

CHESTER AND EXETER

BOTH these ancient cathedral cities have become industrialised and possess county borough powers. Exeter has 9127 acres and 79,960 inhabitants, giving a density of 8·8; Chester has 4142 acres and 46,960 inhabitants, giving a density of 9·1. But whereas Exeter has 20,046 inhabited houses, giving a house density of 3·9, Chester has 14,468 houses giving a density of but 3·2. We should therefore expect Dr. G. B. Page, of Exeter, to give a less favourable report of those signs of ill health which we associate with overcrowding than Dr. J. W. Lobban of Chester, but the reverse is true. The infantile mortality of Chester was 64·7, that of Exeter 38·7; in Chester the deaths in the old zymotic group were 5 from measles, 2 from whooping-cough, 10 from diphtheria, 3 from infectious encephalitis, 6 from cerebrospinal fever and 4 from diarrhœa, against 6 from diphtheria, 1 from dysentery, 4 from cerebrospinal fever and 5 from diarrhœa in Exeter. In Exeter 78 cases of pneumonia were notified with only 4 deaths, 3 of which were in persons over 65 years of age. In Chester 69 cases were notified; the total deaths from pneumonia were 50 but how many of these were in notified cases is not stated. Exeter had 147 new cases and 49 deaths from tuberculosis; Chester 56 new cases and 28 deaths. There were no maternal deaths in Chester and 2 in Exeter. The birth-rates were 13·7 in Exeter and 15·7 in Chester and the death-rates 13·4 and 15·2 respectively.

Dr. Lobban reports that of 57 cases of verified cerebrospinal fever 4 died and the other 53 made complete recoveries without sequelæ. Dr. Page reports 39 cases of this disease with 4 deaths. He also mentions a sharp outbreak of paratyphoid B (46 cases in Exeter and 14 in the surrounding area), traced to confectionery, most probably to contaminated artificial cream. There were no deaths. Outbreaks of paratyphoid traced to confectionery have been fairly common of late, but they have been less severe clinically than the outbreaks traced to meat preparations which were more usual in past years. Medically the most interesting features of these two reports are the low fatality of notified pneumonia in Exeter and the low fatality and absence of sequelæ of cerebrospinal fever in both cities, for there is no doubt that these results were in great part due to chemotherapy.

DERBYSHIRE

This county is slightly larger than Cheshire, having 635,454 acres, but has a population of only 636,890, of whom 299,040 live in rural districts. In 1940 its birth-rate was 15·54; death-rate 12·24. Dr. W. M. Ash, country medical officer, comments on the rise in infant mortality to 55·4 (47·4 in 1939 and 51·1 in 1938). There were 86 more infant deaths in 1940 than in 1939, of which 57 were due to bronchitis and pneumonia. This increase is attributed mainly to the severe weather of the first quarter. In the first quarter of this year, which though severe was less so than in 1940, this excessive death-rate was not repeated. In the winter of 1940 there were no alerts, in that of 1941 there were many, so it is wrong to deduce that these deaths from respiratory diseases were due to shelter life. Dr. Ash hastens to add that he hopes that "whoever reads this comment will read only what I have said and not read into it that I suggest there can be no danger in taking children from warm beds to shelters." The infantile mortality of England and Wales increased from 50 to 55 in 1940; the increased mortality was mainly in the first quarter and due almost entirely to respiratory infection. Severe winters are not generally associated with high infantile mortality, and in Saskatchewan, which has the most vigorous winter in the Empire, infantile mortality is low in that season. In England in 1940, however, we had the blackout as well as the winter, so ventilation in the coldest period was almost as bad as human ingenuity could devise. Of the total death-rate of 12·24 only 0·14 was attributable to the seven principal zymotics, little more than 1% and exactly a tenth of the mortality from cancer.

Infectious Disease in England and Wales

WEEK ENDED FEB. 21

Notifications.—The following cases of infectious disease were notified during the week; smallpox, 0; scarlet fever, 1159; whooping-cough, 1211; diphtheria, 855; paratyphoid, 6; typhoid, 3; measles (excluding rubella), 1996; pneumonia (primary or influenzal), 996; puerperal pyrexia, 182; cerebrospinal fever, 187; poliomyelitis, 6; polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 137; ophthalmia neonatorum, 85. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns there were 3 (0) deaths from enteric fever, 1 (0) from scarlet fever, 1 (0) from measles, 8 (2) from whooping-cough, 32 (3) from diphtheria, 30 (4) from diarrhœa and enteritis under 2 years, and 62 (1) from influenza. The figures in parentheses are those for London itself.

Manchester, Nottingham and Cardiff each reported 1 death from an enteric fever. There were 10 fatal cases of influenza at Birmingham, no other great town reporting more than 4. Liverpool had 4 deaths from diphtheria.

The number of stillbirths notified during the week was 239 (corresponding to a rate of 42 per thousand total births), including 32 in London.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of the fever hospital service group of this society is to be held on Friday, March 27, at 3 P.M. in BMA House, Tavistock Square, London, W.C.1, when Mr. L. F. Hewitt of Belmont Laboratories will speak on recent advances in the preparation of antitoxin.

Notes, Comments and Abstracts

PICKING THE LEADER

IN the selection of potential officers for the German army[1] nothing is left to the intuition of the officer commanding the training units. All available tests are applied, from the analysis of the candidate's handwriting and Rorschach's ink-blot test to tasks close to life situations which have to be mastered under heavy stress or in a state of fatigue. Involuntary movements and behaviour are registered during tests demanding maximal physical and mental effort. The examination lasts for two days and 98% successes are claimed from a follow-up of the candidates' army careers. To bring testing of character and temperament nearer to real-life situations is the principal aim of a test suggested by R. B. Cattell,[2] who thinks little of the clinical and other methods now in use. In his "cursive miniature situation" test a strip of paper moves past a small window in a writing desk. The paper presents a succession of lines and patterns on which the subject has to make pencil strokes according to instructions—marking all horizontal lines, circling clusters of lines, or the like. Surprise patterns, patterns not covered by the instructions, and other impediments are introduced. The strip can be run through at normal and at an increased speed, with distractions, with encouragement, with intimidation, or when the subject is tired, and the scores compared.

To the clinician studying personalities this new device still seems to retain the laboratory atmosphere which restricts the value of so many personality tests. At best, the candidate will look on it as an amusing game; but even so, it seems as remote from the reality of a game of tennis—which Cattell uses as an example of a "miniature life situation"—as tennis is from real life. It is by no means easy to find a suitable group of people in which to demonstrate the validity of the method. Cattell chose 50 delinquents from a prison and the same number of mixed psychotics from a mental hospital and found their average scores differing from an equal group of "normals." But the idea that there are types or features of character common to all delinquents has been given up since Lombroso's time; and there is plenty of evidence that psychotics, even those labelled with one psychiatric diagnosis, vary in their personalities just as much as normal people. That their ratings in Cattell's test diverged from those of normals is easily explained from the behaviour of psychotics and delinquents in all kinds of experiments: they are either not willing or not able to "play." It would perhaps be better to use groups in which some positive or negative personal qualities can be assumed from their station in life, such as chartered accountants or engine-drivers, swindlers or brutal criminals.

There is still much to be said for the clinical method of character study which has proved reliable enough in the psychiatrist's work—having a full account of the person's life history and comparing his own subjective version of it with as many as possible objective data. It cannot be completed, like Cattell's test, in twenty minutes, but it does not take two days, and it can be done without the help of Gestapo and informers if there is a psychiatric social worker to collect the facts.

BLACK CURRANT PURÉE

THE handy orange of the old days has no equally handy substitute, which gives us a chance to become familiar with sundry agreeable variations on a theme. Workers have demonstrated the vitamin C content of hips and black currants, and we have learned to value the resources of the ordinary potato. Mothers of young children are perhaps the only people who still feel seriously the lack of oranges, so convenient for infants who could usually be backed to like the flavour. For the last two years, however, many mothers, as well as welfare centres and children's departments of hospitals, have been using black currant purée with success, and the Ministry of Food has now sponsored the making of a large supply of the purée, by Messrs. Chivers & Sons, for children under two years old. Made from finely sieved black currants with added syrup, it has a natural content of 55 mg. of ascorbic acid per 100 g. This is equivalent to the vitamin C content of orange juice and amounts to 400 international units per fluid ounce. In addition to the supply designed for children under 2 there will be a limited quantity available for older children and invalids. By agreement with the Ministry of Food, the purée will be sold only by chemists and reserved for the use of children and invalids; and it is now on sale.

1. Abstract in *Bull. War Med.* 1941, **2**, 149.
2. *J. gen. Psychol.* 1941, **25**, 59.

ARTERIAL SURGERY

KEATS is reported to have "... scribbled while the precepts of Sir Astley Cooper fell unheeded on his ear." Yet even in Keats, whose heart was not for medicine, such deafness was exceptional; many of his notes begin, attentively enough, "Mr. C. says ..." And was he not singled out from among several hundred students by Cooper to help his own dresser? It is more than a hundred years since the older giant responded in this way to the different quality of the younger; the centenary of Sir Astley Cooper's death was the occasion for a special number of the *Guy's Hospital Reports* in which the well-known portrait is reproduced and his biography, told by the late Sir Charters Symonds, is reprinted from an earlier number of the *Reports*. The rest of the number is given up to arterial surgery in recognition of the important work of Astley Cooper in this field, and one of his original lectures on aneurysm is republished, in which he paid charming tribute to the genius of John Hunter and described in detail the operation for popliteal aneurysm. Mr. R. C. Brock, who has taken over the editorship from Sir Arthur Hurst, reviews Cooper's work on arterial surgery—particularly in relation to ligature of the carotid artery, the external iliac artery and the abdominal aorta—and his experiments on the use of catgut; Cooper used buried catgut as early as 1817 and was probably the first surgeon to do so. Brock also contributes an essay on pulmonary artery ligation, and describes a case of brachial embolectomy, and a case of ligature of the innominate artery after splitting the sternum, with a review of the literature on the subject. Prof. J. A. Ryle adds an historical note on arteriovenous fistula, Mr. Robert Davies-Colley an article on the pathological significance of cirsoid aneurysm, and Mr. Nils Eckhoff his experiences in treating a large cirsoid aneurysm of the chest wall. Mr. D. W. C. Northfield presents a masterly discourse on angiomatous malformations of the brain. Mr. Lancelot Bromley and Mr. D. F. Freebody describe resection and anastomosis of the external iliac artery during the removal of a seminoma of an abdominal testis, and Mr. E. G. Slesinger an unusual case of painful œdema of all four limbs, relieved in three by ganglionectomy. Mr. W. H. Ogilvie records the cure of an aneurysm of the extracranial portion of the vertebral artery by proximal ligature, and Dr. A. G. Hardy and Dr. H. E. H. Denham report a case of Ogilvie's of bilateral excision of popliteal aneurysm. Dr. C. K. Simpson describes traction rupture of the great vessels following traumatic hyper-extension of the head, and Mr. S. Cohen contributes a comprehensive article on traumatic arterial spasm (see *Lancet*, 1941, ii, 806). Mr. J. E. Spalding points out the surgical significance of periarteritis nodosa, and Mr. H. R. Harley collects and collates all cases of popliteal aneurysm, 35 in number, previously recorded in the *Reports*. This impressive symposium from his own hospital, covering nearly every aspect of arterial surgery, is a fitting tribute to Sir Astley Cooper's work.

TIPS ABOUT HIPS

SPURRED by the reference to hip conserve in the 'sixties (*Lancet*, Jan. 24, p. 112) Mrs. Claire Loewenfeld writes to tell us of her own recipe for hips purée, of which she has long been an enthusiastic advocate. Her first experiments with hips were made in 1939 and tested by the National Institute for Research in Dairying. The hip syrup now sold by chemists meets in a measure her wish to see this abundant source of vitamin C tapped; but, as she points out, it seems natural that a woman in the country, in charge of a family of children, should prepare her own hip purée; she advises the following recipe.

Take whole and undamaged hips, top and tail them (using scissors if they are soft) and quickly wash them. Put them

in a clean undamaged enamel saucepan and cover with boiling water in the proportion of 5½ lb. of hips to 3½ pints of water; bring them quickly to the boil and simmer for 15 min. If they are boiled longer it is likely to damage the fruit and spoil the colour and the flavour, but if they are not soft enough it has to be done. They are then rubbed through a fine hair or stainless-steel wire sieve; nothing but a wooden presser, masher or pestle must be used for the rubbing. Mix 2 lb. of mashed hips with 1 lb. of sugar, preferably castor, and stir the mixture for about 20 min. with a wooden spoon. Bring this sweetened purée to simmering point and cook it for 10 min. Store it preferably in earthenware pots; if glass pots are used they must be kept in the dark.

The purée thus made is palatable, agreeably red, and contains 200 mg. of vitamin C per 100 g., as estimated by Messrs. Savory & Moore. This compares well with the 70 mg. per 100 g. of black-currant syrup, and even with the 200 mg. per 100 ml. of the Ministry of Health hip syrup, which works out at about 175 mg. per 100 g. A weak spot in the preparation may be the sugar content which is possibly not high enough to prevent trouble with yeasts and moulds. It is important to avoid any metallic contamination; hence the emphasis which Mrs. Loewenfeld lays on the composition of the various utensils.

Medical News

University of Oxford

On Feb. 28 the honorary degree of M.A. was conferred on Dr. C. A. Wiggins, formerly principal medical officer in Uganda. Dr. Wiggins has presented to the Hope Collection his own collections of African lepidoptera.

University of London

The William Julius Mickle fellowship has been awarded to Dr. Alexander Fleming, professor of bacteriology at St. Mary's hospital medical school.

Society of Apothecaries of London.

C. H. Kitchen, having completed the final examination, has been granted the diploma of the society entitling him to practise medicine, surgery and midwifery.

Royal College of Surgeons of England

The council of the college has decided not to send out this year the first notice of the council election. It was felt that there was no justification for the use of some 2000 leaflets and envelopes merely to announce the date of the election and the date by which intending candidates must send in their nomination forms. But particulars about the election will be found in our advertisement columns. Candidates must send in their applications to the secretary at the college by Monday, March 16, voting-papers will be sent out to all fellows on Friday, March 27, and the election is on July 2.

Royal Society of Medicine

The section of psychiatry of this society will meet on Wednesday, March 11, at 2.30 P.M., when Dr. Denis Hill and Captain J. Watterson will describe studies of electro-encephalograms in psychopathic personalities. At the same hour the section of proctology will hold a clinicopathological meeting at St. Mark's Hospital, City Road, E.C.1. On March 13, at 2.15 P.M., the clinical section will meet at University College Hospital, W.C.1.

Conference on Rehabilitation

On Friday, March 13, at 8 P.M., a conference will be held at the Birmingham Accident Hospital on rehabilitation as it affects the industrial medical officer. Prof. Seymour Barling will be in the chair and the discussion will be opened by Mr. William Gissane, surgeon-in-chief and clinical director at the hospital, and Mr. E. A. Nicoll, medical director of the Miners Rehabilitation Centre at Mansfield. Medical practitioners and senior medical students are invited to attend.

Play Centres in London

The LCC is organising play centres for the children of women workers in localities suggested by the Ministry of Labour. Each centre, as it is opened, is advertised in the local press, in works and factories, and at the labour exchanges; it is then on trial for six weeks and at the end of that time the Ministry decides whether it is really needed. Teas are provided by the Londoners' meal service. Sixteen centres are already open and the Ministry have in all suggested 46 areas in 19 metropolitan boroughs where they think they should be tried.

Hospitals Day

This year the voluntary hospitals of London are holding their flag day on Tuesday, May 5. Offers of help should be sent to Lord Luke, chairman of the London Hospitals Street Collections Central Committee, 36, Kingsway, W.C.2.

Sydney Ringer Lecture

Prof. F. R. Winton will deliver the fourteenth biennial Sydney Ringer lecture at University College Hospital medical school, on Tuesday, March 17, at 4 P.M. He will speak on the physical factors controlling the formation of urine. The lecture is open to medical practitioners and students.

Medical Honours

The military cross has been awarded to the following R.A.M.C. officers in recognition of gallant and distinguished services in the Middle East: Captain C. D. Anderson, M.B. Camb., Captain Niels Pedersen, M.B. Edin., and Captain J. S. Prichard, M.B. Camb.

Paddington Medical Society

The next meeting of this society will take place on Tuesday, March 10, at St. Mary's Hospital at 9 P.M. Lieut.-Colonel Charles Keogh, medical adviser to the Home Guard, will speak on the arrangements for the treatment of home guards and civilian casualties in case of an invasion.

The Index and title-page to Vol. II, 1941, which was completed with the issue of Dec. 27, will be ready shortly. A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Appointments

DICK, ALEXANDER, M.B. GLASG.: medical superintendent of Hawkhead Mental Hospital, Crookston, near Glasgow.
CLYNE, HENRY, M.B. ABERD.: temp. R.O. (civil defence) for Islington.
MACLAREN, D. W. D., M.B. EDIN.: examining factory surgeon for Thurso, Caithness.

Births, Marriages and Deaths

BIRTHS

GRAHAM.—On Feb. 21, at Chester, the wife of Dr. R. Stewart Graham—a daughter.
HOUGHTON.—On Feb. 23, the wife of Captain A. C. Houghton, R.A.M.C.—a son.
MARTIN.—On Feb. 24, at Cambridge, the wife of Dr. Laurence Martin—a daughter.
MOIR.—On Feb. 23, at Ripley, Surrey, the wife of Captain J. H. Moir, R.A.M.C.—a daughter.
PORTER.—On Feb. 27, at Fulmer, Bucks, to the wife of Lieutenant A. G. Porter, R.A.M.C.—a daughter.
RICHARDSON.—On Feb. 21, the wife of Major J. C. Richardson, R.C.A.M.C., of Wootton St. Lawrence, near Basingstoke—a son.
TURNER.—On Feb. 24, at Belfast, the wife of Lieut.-Colonel R. W. D. Turner, R.A.M.C.—a son.
SCOTT-BROWN.—On Feb. 24, the wife of Mr. W. G. Scott-Brown, F.R.C.S. of Harley Street, W.1—a daughter.
WATERFALL.—On Feb. 24, at Yealhampton, to the wife of Flight Lieutenant W. B. Waterfall, F.R.C.S.—a son.

DEATHS

BROWN.—On Feb. 23, at Richmond Park Road, Clifton, Bristol, passed peacefully away after a long illness, William Brown, M.D. GLASG., aged 80 years.
HICHENS.—On Feb. 24, at Hove, Frank Hichens, M.D. LOND., D.P.H., late of Redruth, Cornwall, aged 80.
MALINS.—On Feb. 24, Herbert Malins, B.A. OXFD, M.B. EDIN., F.R.C.S.E., aged 72.
MORRIS.—On Feb 25, at Chelsea, Charles Arthur Morris, C.V.O., M.CHIR. CAMB., F.R.C.S.
POND.—On Feb. 22, at Liverpool, Francis Aloysius Pond, M.R.C.S.
PRYN.—On Feb. 20, at Stoke Gabriel, Devon, Sir William Wenmoth Pryn, K.B.E., C.B., M.R.C.S., D.P.H., surgeon rear-admiral R.N. retd.
RIGG.—On Feb. 23, at Fetcham, Surrey, Vincent John Rigg, M.R.C.S., aged 78.
STEWART.—On Feb. 23, in London, Hugh Milton Stewart, M.D. CAMB.
SHARPE.—At Grahamstown, South Africa, Samuel Howard Sharpe, M.D., LL.D., barrister-at-law, King's Inn, Dublin.
SUTCLIFFE.—On Feb. 26, William Greenwood Sutcliffe, O.B.E., T.D., F.R.C.S. of Margate.
WAKELING.—On Feb. 24, at Bourne End, Thomas George Wakeling, O.B.E., M.R.C.S., aged 77.

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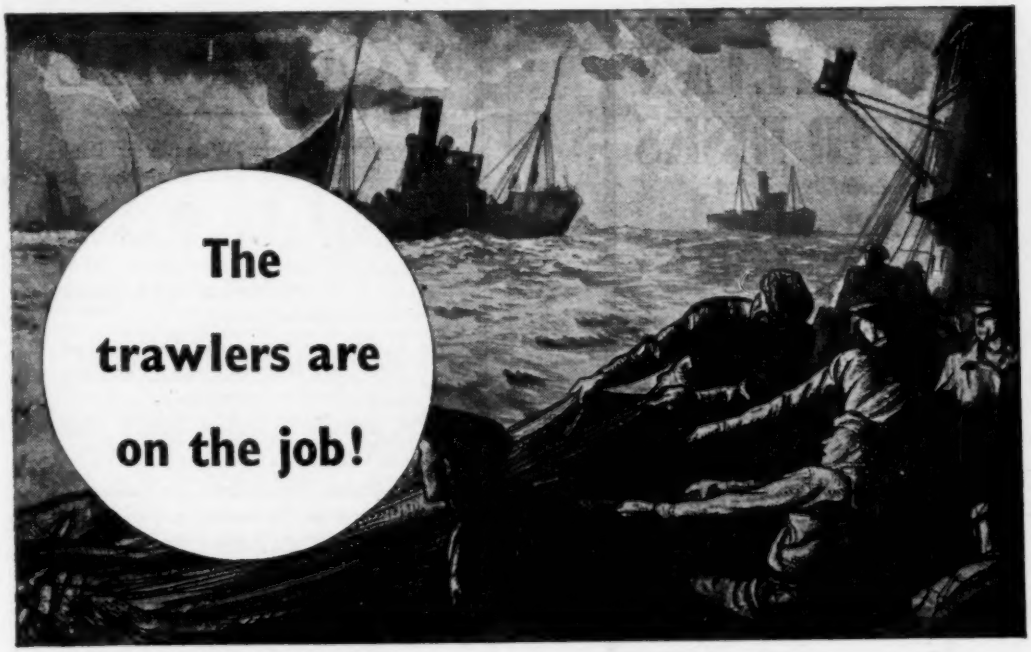

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The **official recommendation for cod liver oil** (see *Report on the Physiological Bases of Nutrition*) is **one teaspoonful per day** for mothers, prospective mothers and for all children and adolescents. Remember the perils of those who bring us this precious oil and prescribe no more in normal circumstances. Where, however, a high Vitamin A and D intake is desired, SevenSeaS Concentrated Oil may be used. It is pure cod liver oil, exceptionally rich in Vitamins A and D and is available as an oil or in capsules.

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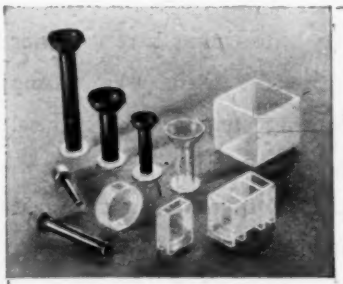

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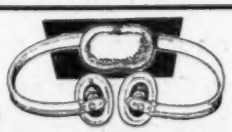

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will be given by
Mr. A. K. HENRY, M.B., M.Ch., F.R.C.S.
consisting of seven sessions.

The course will commence on the 16TH MARCH, 1942, at 2.30 P.M., and be held every afternoon during the week. On Friday there will be an additional session from 10 A.M. to NOON, and the last session will commence at 10 A.M. on Saturday, 21st March.

The course is strictly limited to 20 students and is intended for officers. Applications for admission should be made to the DEAN, British Postgraduate Medical School, Ducane-road, W.12.

The fee for the course will be 5 guineas, but no fee will be charged in the case of officers of the Armed Forces who are nominated for the course by their respective Director-Generals.

University of Oxford.

DIPLOMA IN OPHTHALMOLOGY.

The next EXAMINATION for the Diploma will be held on 22ND JUNE, 1942.

Two months' course of post-graduate Lectures in Ophthalmology and allied subjects will commence on MONDAY, 27TH APRIL, 1942. Clinical work in conjunction with the lectures is available at the Oxford Eye Hospital.

All candidates have to produce a certificate showing that they have duly attended a course of clinical ophthalmology for twelve calendar months in connexion with hospitals or institutions recognised for the purpose by the Board of the Faculty of Medicine.

For further information apply to the Reader in Ophthalmology, Oxford Eye Hospital.

IDA MANN, Margaret Ogilvie Reader in Ophthalmology.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, April 13th, May 11th, June 8th, 1942; MEDICINE, April 20th, May 18th, June 15th, 1942; MIDWIFERY, April 21st, May 19th, June 16th, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

ROYAL COLLEGE OF SURGEONS OF ENGLAND,

Lincoln's Inn Fields, W.C.2.

NOTICE is hereby given that an election of three Fellows into the Council will take place at the College on Thursday, the 2nd day of July next, at 11 A.M., in the vacancies occasioned by the retirement in rotation of Mr. Ernest W. Hey Groves, Mr. G. Grey Turner, and Sir Hugh Lett, Bt.

Blank forms of the requisite notice from a candidate and of his nomination may be obtained on application to me, and must be received by me duly filled up within ten days from this date—i.e., not later than on Monday, the 16th March.

A voting-paper will be sent by post to each Fellow, whose address is registered at the College, on Friday, the 27th March.

Fellows are requested to give notice, without delay, of any change of address, so that their voting-papers may not be misdirected.

6th March, 1942. KENNEDY CASSELS, Secretary.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Council invite applications for the following Annual EXAMINERSHIPS:—

FOR THE FELLOWSHIP.	*Number to be elected.*	*Number who seek re-election.*
*Anatomy	4	4
*Physiology	4	2
FOR THE LICENCE IN DENTAL SURGERY.		
Board of Examiners in Dental Surgery (Surgical Section)	6	5
(Examiners must be Fellows of the College, and will be required to examine in General Anatomy and Physiology, and in Surgery, Medicine, Bacteriology, and Pathology.)		
UNDER THE CONJOINT EXAMINING BOARD.		
Elementary Biology	4	3
*Anatomy	3	2
*Physiology	2	2
†Midwifery	4	4
Pathology	4	3
Public Health, Part I (Bacteriology and Parasitology)	1	0
Public Health, Part II	1	0
Pathology and Tropical Hygiene	1	1
Tropical Medicine and Surgery	1	1
Ophthalmic Medicine and Surgery	3	3
Psychological Medicine	1	1
Laryngology and Otology	3	3
Medical Radiology	2	1
Anæsthetics	2	2
Child Health	2	2

* Candidates must hold a medical qualification registrable in this country.

† Candidates must be Fellows or Members of the College.

Applications must be in writing and must reach the Secretary by Monday, 23rd March. KENNEDY CASSELS, Secretary.
Lincoln's Inn-fields, W.C.2, 7th March, 1942.

CITY OF LONDON MENTAL HOSPITAL
Near DARTFORD, KENT.
Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

THE COPPICE, NOTTINGHAM
HOSPITAL FOR MENTAL DISEASES
President: The Right Hon. LORD BELPER
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NORTHAMPTON

FOR THE UPPER AND MIDDLE CLASSES ONLY.

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

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This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

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Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

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The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

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Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

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A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

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A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2362.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

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THE GROVE HOUSE,

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Private Home for Ladies mentally ill. Voluntary and Temporary Patients received.

Medical Superintendent: Dr. J. A. McCLINTOCK.

London Jewish Hospital,

Stepney Green, E.1.

Applications are invited from medical practitioners, Male or Female, for the appointment of RESIDENT HOUSE OFFICER (combined House Physician, House Surgeon, and Casualty Officer's duties) (A), which is now vacant for a period of either six months or until 30th April, 1942, including R practitioners within three months of qualification. Salary is at the rate of £100 per annum, plus a proportion of the grant received in connexion with the M.S., with full resident emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by three recent testimonials, to be sent to the SECRETARY immediately.

Royal National Orthopædic Hospital,

BROCKLEY HILL, STANMORE, MIDDLESEX.

Applications are invited from registered medical practitioners (including R practitioners holding A posts) for the appointment of RESIDENT HOUSE SURGEON (B2), for six months from 1st April. Salary £200 per annum, with board, quarters, laundry, &c.

Applications, stating age, nationality, qualifications, and previous experience, with copies of testimonials, to be sent to the SECRETARY, Royal National Orthopædic Hospital, 234, Great Portland-street, W.1, not later than 18th March.

The Royal Cancer Hospital (Free)

(Incorporated under Royal Charter),
Fulham-road, London, S.W.3.

Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1), to commence duties on 1st April, 1942. Applicants should have held house appointments and had surgical experience. The appointment is for twelve months at a salary at the rate of £350 per annum, with board, residence, and laundry. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

Applications, to be made on a form which will be supplied by the Secretary, with copies of not more than three recent testimonials, to be sent to the Secretary not later than the first post on Wednesday, 11th March, 1942.

CLEMENT COBBOLD, Secretary.

Poplar Hospital,

East India Dock-road, E.14.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A). R practitioners within three months of qualification may apply, when appointment will be for a period of six or nine months.

Applications are also invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (B2). R practitioners who now hold A posts may apply, when appointment will be limited to six months. Otherwise it will be for a period of nine months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible.

D. H. LINDSAY, House Governor and Secretary.

West London Hospital,

Hammersmith, W.6.

APPOINTMENT OF RESIDENT ANÆSTHETIST AND E.N.T. AND OPHTHALMIC HOUSE SURGEON (B2).

Applications are invited from registered medical practitioners for the above appointment, to become vacant on 25th March, including R practitioners now holding A posts who have not completed six months in such post.

The appointment is for a period of six months and is terminable by one month's notice on either side. Salary according to experience, but not less than £100 per annum, with the usual residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, should be accompanied by copies of three recent testimonials, and should reach the undersigned not later than Wednesday, 11th March. H. A. MADGE, Secretary.

County Borough of West Ham.

Applications are invited for the post of TEMPORARY FIRST ASSISTANT MEDICAL OFFICER (B1) at Forest Gate Hospital, Forest Lane, E.7. The appointment will be for the duration of the war only, but can be terminated at any time by one month's notice on either side. Salary £525 per annum, rising by annual increments of £25 to a maximum of £600 per annum, plus temporary war bonus, with apartments, board, and laundry, valued at £150.

Suitably qualified R practitioners holding B2 or B1 posts may apply.

Candidates must be qualified registered medical practitioners, and preference will be given to those who have had, in addition to a general hospital appointment, an appointment in a hospital where they have had charge of maternity beds. The person appointed will be in charge of the hospital during the absence of the medical superintendent.

The successful candidate must be prepared to serve in any other of the Council's institutions.

The appointment will be subject to the Council's Regulations as made from time to time regarding holidays, sick pay, &c., and the successful candidate will be required to pass a medical examination.

Forms upon which application must be made, with relevant particulars, can be obtained from Dr. E. Ashworth Underwood, Medical Officer of Health, Public Health Department, 88, Romford-road, West Ham, E.15, on receipt of a stamped addressed foolscap envelope, and should be returned to the undersigned not later than 21st March, 1942.

Canvassing members of the Council is prohibited and will disqualify.

CHARLES E. CRANFIELD, Town Clerk.

Town Hall, West Ham, E.15, 27th February, 1942.

Hampstead General Hospital.

Applications are invited from single medical Men or Women, including R practitioners holding A posts, for HOUSE SURGEON (B2), resident, for six months, vacant 1st April. Salary £133 6s. 8d. per annum, with board, lodging, and laundry.

Applications on the prescribed form, with copies of three testimonials, to be returned not later than 21st March.

KENNETH A. F. MILES, House Governor.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

British Postgraduate Medical School.

(UNIVERSITY OF LONDON.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) in Obstetrics on 1st April, 1942, including R practitioners within three months of qualification. The appointment is for six months and carries a salary of £105 per annum, plus the usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent to the DEAN, British Postgraduate Medical School, Ducane-road, W.12, not later than Tuesday, 17th March, 1942.

Willesden General Hospital,

Harlesden-road, N.W.10

Applications are invited from registered medical practitioners for the appointment of a CASUALTY OFFICER (B2), to become vacant on the 1st April, 1942, including R practitioners who now hold A posts. The appointment will be for a period of six months. Salary at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality and present post, and accompanied by copies of three recent testimonials, should be sent not later than 21st March, 1942, to:

J. M. DRAKE, Secretary.

General Hospital, Nottingham.

(501 Beds.)

ORTHOPÆDIC AND FRACTURE DEPARTMENT.

Applications are invited from registered medical practitioners (Male) for the appointment of a HOUSE SURGEON (B1) for the above Department—duties to commence as soon as possible. The appointment is for six months. Salary at the rate of £300 per annum, with full residential emoluments. It is a large fracture department, and experience in the treatment of fractures is desirable. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, stating age, qualifications with dates, experience, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—

HENRY M. STANLEY, House Governor and Secretary.

City and County of Newcastle upon Tyne.

SHOTLEY BRIDGE HOSPITAL. (900 Beds.)

Applications are invited from registered medical practitioners (Male) for the appointment of RESIDENT MEDICAL OFFICER (B1). Applicants should have held previous house appointments. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. The appointment is tenable for a period of twelve months and the salary is at the rate of £450 per annum, together with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments and accompanied by copies of three recent testimonials, should be sent immediately to the MEDICAL OFFICER OF HEALTH, Town Hall, Newcastle upon Tyne, 1.

The Royal Infirmary, Bradford.

RESIDENT MEDICAL OFFICER AND ASSISTANT PATHOLOGIST (B1 post) (Male, single) required at an early date. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Twelve months' appointment. Salary £250 per annum, with board, residence, and laundry. There are 115 Medical Beds and two House Physicians. The successful applicant will be required to act as Assistant to the Pathologist.

Applications, stating age, nationality, qualifications, and previous experience, with copies of not more than three recent testimonials, should be received not later than 31st March by—

H. TRUSSON, House Governor and Secretary.

27th February, 1942.

Grimsby and District Hospital.

Applications are invited from Male or Female registered medical practitioners for the appointment of a HOUSE PHYSICIAN (A). R practitioners within three months of qualification may apply, when appointment will be for a period of six months. Salary is at the rate of £175 per annum, with full residential emoluments. Duties to commence 1st April, 1942.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—

H. B. COATES, Secretary-Superintendent.

23rd February, 1942.

Hull Royal Infirmary.

Applications are invited from registered medical practitioners for the post of CASUALTY OFFICER (A), vacant May. R practitioners within three months of qualification may apply, when appointment will be limited to six months. Salary at the rate of £175 (plus £25 war bonus) per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of recent testimonials, should be sent to: R. J. CARLESS, House Governor.

Dewsbury and District General

INFIRMARY, DEWSBURY. (100 Beds.)

Applications are invited from registered medical practitioners, Male, for the appointment of SENIOR HOUSE SURGEON (B1 post), to become vacant 1st April. Salary is at the rate of £200 per annum. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, stating age, qualifications with dates, and nationality, together with copies of recent testimonials, to be addressed to the SECRETARY-SUPERINTENDENT as soon as possible.

Nottingham and Midland Eye Infirmary.

Applications are invited from registered medical practitioners, Male and Female, for the vacant post of RESIDENT HOUSE SURGEON (B2), including R practitioners who now hold A posts. Six months' appointment. Salary £200 per annum, with full residential emoluments. Large out-patient department. Post recognised D.O.M.S.

Applications, stating age, qualifications, and nationality, with copies of three recent testimonials, forthwith to—

T. RUSSELL MOORE, Secretary.

The Ropewalk, Nottingham.

York County Hospital.

(222 Beds.)

Applications are invited from registered medical practitioners for the appointment of a HOUSE SURGEON (A), vacant 1st April, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary is at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—

J. R. MACKRILL, Secretary.

Northampton General Hospital.

(405 Beds.)

Applications are invited immediately from registered medical practitioners, including R practitioners within three months of qualification when appointment will be for a period of six months, for the appointment of HOUSE SURGEON (A). Salary at the rate of £150 per annum, with board, residence, and laundry.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to—

GORDON S. STURTRIDGE, M.B., B.S., Superintendent.

6th March, 1942.

County Borough of Rotherham.

MUNICIPAL GENERAL HOSPITAL.

RESIDENT ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners for the above appointment. R practitioners within three months of qualification may apply when appointment will be limited to a period of six months. The salary is at the rate of £180 per annum, with full residential emoluments. A temporary cost-of-living bonus amounting at present to 10 per cent. of the annual salary has been granted by the Borough Council but is subject to alteration or cancellation by the Council. The appointment is subject to the provisions of the Local Government Superannuation Act and is terminable by one month's notice on either side.

Application forms may be obtained from the Medical Superintendent, Municipal General Hospital, Rotherham, and must be returned, endorsed "Resident Assistant Medical Officer," on or before the 18th March, 1942, to—

CHAS. L. DES FORGES, Town Clerk.

Municipal Offices, Rotherham, 21st January, 1942.

Staffordshire County Council.

STANDON HALL ORTHOPÆDIC HOSPITAL,
Near ECCLESHALL, STAFFORD. (120 Beds.)

RESIDENT MEDICAL OFFICER (B1).

Applications are invited for the above-mentioned post from registered medical practitioners, including suitably qualified R practitioners holding B2 or B1 appointments. The salary is at the rate of £350 per annum, with full residential emoluments, and the appointment, which in the first instance will be for one year, will be subject to one month's notice. The Hospital has a M.S. Fracture Department (A).

Applications, together with copies of three recent testimonials, must reach the undersigned by the 19th March, 1942.

H. L. UNDERWOOD, Clerk of the County Council.

County Buildings, Stafford, 26th February, 1942.

Borough of Swindon.

Applications are invited from registered medical practitioners for the post of TEMPORARY ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare and School Medical work. Salary scale £500 to £700 by £25 per annum increments. Commencing salary will be based on candidate's previous experience. The post may be terminated by one month's notice on either side.

Applications, stating age, and giving full particulars of training, qualifications, and experience, together with copies of two recent testimonials, should be forwarded to the Medical Officer of Health, Civic Offices, Swindon, from whom further particulars can be obtained.

LLYWELYN ROBERTS, Medical Officer of Health.

Civic Offices, Swindon.

York Maternity Hospital.

Applications are invited from registered medical practitioners (Female) for appointment as RESIDENT MEDICAL OFFICER (B2), to become vacant on 1st April, 1942. The duties of the successful applicant will consist chiefly of maternity and child welfare work in connexion with the York Maternity Hospital and the Child Welfare Clinics; she will be expected to perform other duties as may be prescribed by the Medical Officer of Health. The Medical Officer of Health is the Medical Superintendent of the Hospital, and there is a Senior Medical Officer. The appointment will be for six months and is subject to the Council's Sick Allowance Regulations.

The salary will be at the rate of £200 per annum, together with emoluments (board-residence at the Hospital) valued at £150 per annum. A war bonus (at present £13) is also paid.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, together with copies of three recent testimonials, should be sent to: P. R. MCNAUGHT, Medical Officer of Health.

50, Bootham, York.

Swansea General and Eye Hospital.

Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (B2) to the AURAL AND OPHTHALMIC DEPARTMENTS, to become vacant on the 9th March next. R practitioners who now hold A posts may apply when appointment will be limited to six months; otherwise it will be for a period of twelve months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to—

O. C. HOWELLS, Secretary-Superintendent.

16th February, 1942.

Macclesfield General Infirmary.

(100 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR HOUSE SURGEON (A), which will become vacant on the 1st April, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications, and nationality, and accompanied by copies of two testimonials, to be sent not later than 21st March, 1942, to—

H. K. GWILLIAM, Secretary and Superintendent.

City of Birmingham.

MATERNITY AND CHILD WELFARE DEPARTMENT.

Temporary Women MEDICAL OFFICERS are required for a period commencing on 8th May, 1942, and terminating on 27th October, 1942.

The work includes attendance at antenatal clinics and children's clinics.

Applicants should have had experience in work with mothers and children, including a six months' resident post in a maternity hospital and in a children's hospital. The salary offered is £10 per week.

The persons appointed cannot terminate their respective appointments within the period named except for health reasons.

Applications, endorsed "Temporary Medical Officer," and accompanied by copies of three recent testimonials, to be made on a form obtainable from the MEDICAL OFFICER OF HEALTH, Council House, Birmingham, 3, and returned to him on or before 18th March, 1942.

County Borough of St. Helens.

Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH (Male) for Civil Defence duties in St. Helens. The officer appointed will be responsible under the Medical Officer of Health for the general organisation and administration of the Casualties Services of the Borough. The Medical Officer appointed may also occasionally be required to carry out other Public Health duties as the Medical Officer of Health may direct.

It is expected that the appointment, though temporary, will last during the war period, subject to one month's notice on either side. The salary will be at the rate of £700 per annum, plus a temporary war cost-of-living bonus at present value £24 per annum. There is also a motor-car allowance at the rate of £50 per annum. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be forwarded not later than the 20th March, 1942, to—

FRANK HAUXWELL, Medical Officer of Health.

Town Hall, St. Helens, 28th February, 1942.

Nottinghamshire County Council.

RANSOM SANATORIUM.

Applications are invited from duly qualified and registered Female medical practitioners for the appointment of JUNIOR ASSISTANT RESIDENT MEDICAL OFFICER at the COUNTY TUBERCULOSIS SANATORIUM, Sherwood Forest, near Mansfield (165 Beds).

The salary, payable monthly, will be at the rate of £200 per annum, plus war bonus, together with board, residence, and laundry. The appointment is a temporary one and will be terminable by one month's notice on either side.

The person appointed will be required to reside at the Sanatorium and will act under the direction of the Medical Superintendent and perform such duties as may be prescribed. Experience in the treatment of surgical tuberculosis and X-ray work will be considered as an advantage.

Applications, stating age, qualifications, and experience, and accompanied by copies of not more than three recent testimonials, should be forwarded to the County Medical Officer, Shire Hall, Nottingham, as soon as possible.

K. TWEEDALE MEABY, Clerk of the County Council.

Shire Hall, Nottingham, 3rd March, 1942.

County Borough of Rochdale.

MUNICIPAL GENERAL HOSPITAL, BIRCH HILL.
(475 Beds.)

Applications are invited from registered medical practitioners (Male) for the post of JUNIOR RESIDENT MEDICAL OFFICER (A). R practitioners within three months of qualification may apply when appointment will be for a period of six months and in any case will only be renewable for a further period of six months. The Hospital provides accommodation for medical, surgical, maternity cases, and children, and the appointment includes certain services at the adjoining Public Assistance Institution. Salary at the rate of £225 per annum, plus war bonus of approximately £12 per annum, with full residential emoluments.

Application forms may be obtained from the Medical Officer of Health, Public Health Offices, Baillie-street, Rochdale, and must be returned to him not later than Thursday, the 12th March, 1942.

HARRY BANN, Town Clerk.

Royal United Hospital, Bath.

Applications are invited from registered medical practitioners (Male), including R practitioners within three months of qualification, for the following appointments, which are now vacant:—

HOUSE SURGEON (A) (General Surgery and Ear, Nose and Throat) and HOUSE SURGEON (A) (General Surgery).

Salaries at the rate of £150 per annum, with board, residence and laundry. R practitioner appointments will be for a period of six months.

Applications (clearly indicating the post desired), stating age, qualifications, and experience, together with a copy of three testimonials, to reach the undersigned at once.

J. LAWRENCE MEARS, Secretary-Superintendent.

2nd March, 1942.

Coventry and Warwickshire Hospital.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL REGISTRAR (B1), which becomes vacant on the 1st April next. Applicants should have held previous house appointments and have had surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary will be at the rate of £500 per annum, together with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the HOUSE GOVERNOR AND SECRETARY, Coventry and Warwickshire Hospital, Coventry.

Hull Corporation Health Department.

BEVERLEY ROAD HOSPITAL.

TEMPORARY ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners of either sex, who must be single and not more than forty years of age, for the above residential appointment. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise it will be for a period of one year. Salary £250 per annum, together with usual residential emoluments.

Application forms may be obtained from the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, to whom they should be returned immediately.

East Suffolk and Ipswich Hospital.

The Board of Management invites applications for the appointment on the Visiting Medical Staff of HONORARY OPHTHALMIC SURGEON to fill a vacancy occasioned by death.

Candidates must be medical graduates of one of the universities of the British Empire and their names entered on the Medical Register. The appointment is temporary and is terminable within twelve months of the conclusion of hostilities, but the candidate will be eligible for re-election. Canvassing will disqualify.

Form of application, which should be returned by 21st March, can be obtained from: ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 28th February, 1942.

City of Portsmouth.

SAINT MARY'S HOSPITAL (1200 Beds.)

Applications are invited for the appointment of JUNIOR ASSISTANT RESIDENT MEDICAL OFFICERS (B2). R practitioners holding A posts may apply, when appointment will be limited to six months, otherwise it will be for a period of twelve months. Salary at the rate of £250 per annum, with residential emoluments valued at £125 per annum.

Application forms may be obtained from, and returned to, the Medical Officer of Health, Northern Secondary School, Portsmouth.

F. J. SPARKS, Town Clerk.

Municipal Offices, Royal Beach Hotel, Southsea.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT.

Applications are invited from registered medical practitioners (Male and Female), including those within three months of qualification, for the following posts, vacant 31st March, 1942:—

Two HOUSE SURGEONS (A).

One RESIDENT ANÆSTHETIST (A).

Salary will be at the rate of £150 per annum, with board, residence and laundry, and the appointment will be for six months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the HOUSE GOVERNOR.

Kettering and District General HOSPITAL.

Applications are invited from registered medical practitioners for the appointment of a HOUSE SURGEON (A), including R practitioners within three months of qualification, when appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

G. W. JACKSON, Secretary-Superintendent.

Burton-on-Trent General Infirmary.

Applications are invited from registered medical practitioners (Male) for the appointment of CASUALTY OFFICER and HOUSE PHYSICIAN (A), including R practitioners within three months of qualification when appointment will be for six months. Salary at the rate of £150 per annum, with usual emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to—

E. W. THORNLEY, Superintendent and Secretary.

Addenbrooke's Hospital, Cambridge.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), to become vacant on 26th April, 1942. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £350 per annum.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent not later than Wednesday, 25th March, 1942, to—

J. A. BEARDSALL, Secretary-Superintendent.

West Cornwall Hospital, Penzance.

(Total 186 Beds.)

Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A). R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to—

K. I. NEWELL, Secretary-Superintendent.

Scarborough Hospital.

(140 Beds.)

Applications are invited from registered medical practitioners (Female) for the posts of HOUSE SURGEON (A) and HOUSE PHYSICIAN (A). The appointments are for six months beginning 1st May, 1942. Salary at the rate of £150 per annum, together with board, residence, laundry, &c.

Applications, stating age and experience, together with not more than three recent testimonials, to be sent to the HONORARY SECRETARY not later than the first post on Monday, 16th March.

Bracebridge Heath Mental Hospital,

BRACEBRIDGE HEATH, Near LINCOLN.

TEMPORARY ASSISTANT MEDICAL OFFICER (B1).

Applications are invited from registered medical practitioners (Male or Female) for the above (whole-time) appointment. R practitioners should not apply. Salary £8 8s. per week, with the usual residential emoluments. Additional £50 per annum if holder of the D.P.M. (Eng.).

Apply, with copies of testimonials, to the MEDICAL SUPERINTENDENT.

County Borough of Blackburn.

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the post of RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (A) at QUEEN'S PARK HOSPITAL AND INSTITUTION, Blackburn, at a salary of £200 per annum, together with board, apartments, and attendance. The appointment will be limited to a term not exceeding one year, or if an R practitioner is appointed a period of six months.

Further particulars may be obtained from the Public Assistance Officer, Cardwell-place, Blackburn, to whom applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials, must be sent.

Blackburn. CHAS. S. ROBINSON, Town Clerk.

Jenny Lind Hospital for Children,

NORWICH.

Applications are invited for the post of RESIDENT MEDICAL OFFICER. Salary £120, with board, residence, and laundry. Candidates (Female), who must possess registered qualifications, should forward applications, stating age, experience, &c., together with copies of testimonials, not later than the first post on Monday, 9th March, to: FRANK INCH, Secretary.

27th February, 1942.

Stirling District Mental Hospital,

LARBERT.

Applications are invited from registered medical practitioners for the appointment of SENIOR ASSISTANT MEDICAL OFFICER (B1) (Temporary—war emergency). Previous mental hospital experience essential. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply, but they must have obtained the sanction of the S.C.M.W.C. to their application. Salary £500 per annum, with additional £50 if holder of D.P.M., and the usual residential emoluments.

Apply, in writing, with copy of testimonials, to the MEDICAL SUPERINTENDENT.

Bradford Children's Hospital.

HOUSE SURGEON (A) (Male or Female) wanted 28th March. R practitioners within three months of qualification are invited to apply when appointment will be for a period of six months. Salary £150 per annum, with board, residence, and laundry.

Applications, stating age and nationality, with recent testimonials, should be sent not later than 16th March to—

J. W. LONGLEY, Secretary-Superintendent.

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City of Liverpool.

FAZAKERLEY SANATORIUM.

Applications are invited for the appointment of a Full-time RESIDENT ACTING DEPUTY MEDICAL SUPERINTENDENT (B1) for the Fazakerley Sanatorium (194 Beds) during the absence of the regular officer on war service, at a salary of £400 to £450 per annum, according to experience, together with the usual residential allowances.

Applicants must possess one of the higher qualifications in medicine or surgery and have had considerable experience since qualification. Some experience in the treatment of tuberculosis is desirable. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

The person appointed will be required to assist the Medical Superintendent in the administration of the Sanatorium, training of nurses, &c., and will deputise for the Medical Superintendent when required.

Any fees received in connexion with the appointment to be handed over to the City Council.

Applications, upon forms obtainable from the Medical Officer of Health, Hospitals Department, Gordon House, Belmont-grove, Liverpool, 6, to be endorsed "Acting Deputy Medical Superintendent" and returned to the undersigned so as to be received not later than 10 A.M. on Monday, 16th March, 1942.

Canvassing members of the City Council will be regarded as a disqualification. W. H. BAINES, Town Clerk.

Municipal Buildings, Dale-street, Liverpool, 2.

City of Liverpool.

ALDER HEY CHILDREN'S HOSPITAL.

Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT ASSISTANT MEDICAL OFFICER (B2) at the above Hospital.

Preference will be given to candidates with experience in children's diseases. R practitioners who now hold A posts may apply when appointment will be limited to six months; otherwise it will be for a period of twelve months. The salary is at the rate of £200 per annum, with full residential allowances. All fees received in connexion with the appointment to be handed over to the City Council. The appointment will be made in accordance with the Standing Orders of the City Council and will be determinable by one month's notice on either side.

Applications, stating whether R practitioner, age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be endorsed "Resident Medical Officer" and sent not later than 10 A.M. on Monday, 16th March, 1942, to—

W. H. BAINES, Town Clerk.

Municipal Buildings, Dale-street, Liverpool, 2,
February, 1942.

Surrey County Council.

PUBLIC HEALTH DEPARTMENT.

REDHILL COUNTY HOSPITAL, EARLSWOOD COMMON, REDHILL.

RESIDENT ASSISTANT MEDICAL OFFICER (B2) (MALE OR FEMALE).

Applications are invited for the above appointment, which will be available for a period of six months, renewable for a further period of six months (R practitioners who hold A appointments may apply but if appointed the term of appointment is limited to six months). Salary £250 per annum, together with full residential emoluments valued at £125. The Hospital is a general one of 470 Beds.

Applications, stating age, qualifications, and experience, and enclosing copies of not more than three testimonials, should be sent to the Medical Superintendent of the Hospital so as to reach him not later than 12th March.

DUDLEY AUKLAND, Clerk of the Council.

County Hall, Kingston-upon-Thames, 6th March, 1942.

Royal Surrey County Hospital,

GUILDFORD. (450 Beds.)

Applications are invited from registered medical practitioners, Male, including R practitioners, for the following A appointments vacant on 1st April, 1942:—

(1) HOUSE PHYSICIAN (recognised for the M.D. examination.

(2) CASUALTY OFFICER.

The appointments are each for six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and copies of not more than three testimonials, should reach the SECRETARY-SUPERINTENDENT by 18th March.

Salisbury General Infirmary.

(Voluntary Hospital—Total 365 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (B2), to become vacant on the 16th March. R practitioners who now hold A posts may apply when appointment will be limited to six months. The salary is at the rate of £125 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent as sopn as possible to—

JOHN WILLIAMS, Secretary-Superintendent.

Cancer Act, 1939.

LINCOLNSHIRE JOINT CANCER COMMITTEE.

The Committee invite applications for the post of DIRECTOR OF RADIOTHERAPY. He will have charge of the Cancer Treatment Centre to be established by the Committee at the Scunthorpe and District War Memorial Hospital for the treatment of cases of cancer from Lincolnshire.

Forty In-patient Beds are provided at the Hospital, and the Director will be required to hold out-patient clinics at other hospitals in the County and to advise the Committee generally.

The commencing salary will be £1200 per annum.

Applications should be received by 23rd March, 1942.

For further particulars of the duties and for forms of application apply to—

ERIC W. SCORER, Clerk of the Joint Cancer Committee.

County Offices, Lincoln.

Royal Albert Edward Infirmary

AND DISPENSARY, WIGAN. (Normally 189 Beds.)

Applications are invited from registered medical practitioners (Male) for the appointment of a HOUSE SURGEON (A), to become vacant on 1st April, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to—

A. STANLEY BRUNT, General Superintendent and Secretary.

2nd March, 1942.

Worcester County and City Mental

HOSPITAL, POWICK, Near WORCESTER.

Applications are invited from registered medical practitioners for the appointment of TEMPORARY ASSISTANT MEDICAL OFFICER (B1) (Male). The appointment is whole time. Previous experience in a mental hospital is desirable but not necessary. Suitably qualified R practitioners holding B2 or B1 posts may apply. Salary at the rate of £400 per annum, with apartments, board, and laundry.

Applications, stating age, nationality, qualifications, and experience, accompanied by copies of three recent testimonials, should be forwarded as soon as possible to the MEDICAL SUPERINTENDENT.

Victoria Hospital, Burnley.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), to become vacant shortly. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent forthwith to—

J. E. WHEATCROFT, Secretary.

The Committee of the Royal Surrey

COUNTY HOSPITAL, GUILDFORD, invite applications for the post of HONORARY ORTHOPÆDIC SURGEON for the duration of the war, to take charge of the Orthopædic Department, including operations; out-patients seen Tuesdays, 2 P.M. 981 new patients attended 1941. Previous orthopædic experience essential.

Applications to be sent to the SECRETARY-SUPERINTENDENT by 21st March.

The Austin Motor Company Limited

require Whole-time JUNIOR MEDICAL OFFICER immediately. Commencing salary £700 per annum. Applications, stating age, qualifications, and experience, together with copies of two recent testimonials, to SECRETARY, Longbridge Works, Birmingham.

REFUGEE DOCTOR, one year's experience

at English hospital, specially experienced Gynæcologist, able to drive car, wishes position as an ASSISTANT with private practitioner.—Address, No. 852, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

To Medical Men: Lady Secretary,

experienced, seeks post, part or full time. Thorough knowledge medical terms, shorthand and typing. Over call-up age. London only, West End preferred.—Address, No. 851, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Woman Assistant wanted for Country

Practice, for duration or with view permanency or partnership. Local hospital facilities; easy reach London. Live in at start.—Particulars to: Address, No. 850, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Nurse Secretary-Receptionist,

Technical, British nationality, French Red Cross Certificate, 13 years' experience Paris, seeks Post, London.—Mrs. GALEA, 9, Knaresborough-place, S.W.5.

Wanted, 1939 Motor Car, small

mileage. State price. Also good 7-seater.—Address, No. 853, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

CONSTIPATION

The softening of impacted fæces and lubrication of the bowel may be effected by any good mineral oil emulsion. But more than this is needed if the intestinal tract is to be cleared of those organisms which are responsible for the putrefactive and fermentative processes always associated in some degree with chronic constipation. Emulsion Lactobacillus Acidophilus alone fulfils this need. The vast numbers of viable L. acidophilus which this unique emulsion contains enable it to exert this important detoxicative effect.

Proof of the superiority of E.L.A. is seen in the great change brought about in the intestinal flora following its regular administration and the pronounced and rapid clinical improvement in cases of auto-intoxication.

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The endonasal application of specially prepared posterior pituitary in powder form has provided an interesting development in the medical treatment of peptic ulcer. Reports so far published, from both English and American sources, indicate the important position which this new treatment promises to occupy.

The treatment consists of a course of twenty-eight powders—Pituitary Powders (Spicer)—one of which is used as a snuff night and morning for fourteen consecutive days. Apart from the specific effect (American workers report improvement of varying degrees in 88 per cent. of their cases), gains in weight, strength and appetite are usual. The percentage of recurrences is small.

A pamphlet dealing fully with the treatment is available and will be gladly sent to interested physicians.

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Boxes of 28 powders, 28/9 nett

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